

THE WHOLE
A R T
 O F
D Y I N G.

In Two P A R T S.

The First being an Experimental Discovery of all the most useful Secrets in Dying Silk, Wool, Linnen and the Manufactures thereof, as Practised in *England, France, Spain, Holland and Germany.*

To which is Added,

A Discourse of Pot and Weyd Ashes, as well as several other Foreign Ingredients used in D Y I N G.

Written Originally in the *German* Language.

The Second Part is a General Instruction for the Dying of Wools and Woollen Manufactures of all Colours; for the Culture of the Drugs used in the Tinctorial Art, as also for the Dying of Hats; Published by the especial Command of the present *French* King in that Language, and Illustrated with several Philosophical and Practical Annotations by the *German* Translator.

Both which are Faithfully rendred into *English* from their Respective Originals.

L O N D O N: Printed by *William Pearson*, and sold by *J. Nutt*, near *Stationers-Hall*. MDCCV.



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LONDON: Printed by William ...
... 1755

TO THE
READER.

THE Ingenious Reader is hereby Invited to the perusal of two Books equally Instructive and Advantageous. The first Originally Written in the German Language, is the Result of the long Experience of the best Masters of the Tinctorial Art at Frankfort, Nurenberg, Leipzig, Erfurt, Hamburg, Geneva and the Low Countries; Collected by the Diligent Inquiries, and at the great Expence of a Zealous Votary to Physical and Experimental Knowledge, who we are assured purchased most of the following Receipts at a very dear Rate, from those who valued themselves on being the Sole Masters of them: By which Means the Reader is cheaply obliged with the Select Practical Secrets of several Nations, which must necessarily furnish abundant Hints for the Improvement of the useful Art of Dying; and enable the Intelligent Master of it to discover why the Spanish, Dutch, or any

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other Nation should be Famed for Dying any particular Colour better than our own.

The Second Tract was Written and Published in French by the especial Command of the present French King, and Comprizes whatever could be suggested by the best Judges of that Nation appointed by their Sovereign to Consult together in order to compleat the Theory and Practice of this no less Excellent than Necessary Art: To which purpose no expence or trouble was thought too much. And indeed there is no shadow of Reason why what is really found to be the Interest of that Nation in this particular; should not be unquestionably determin'd to be ours; since our Soil is at least as capable of producing any of the mentioned necessary Drugs, and if not more temperate, is still more particularly appropriated to the Culture of most of'em than the so much boasted France. And if I am not mistaken, those Enemies of the English Nation, who as maliciously as unjustly have deprived us of the Talent of Invention, have never yet presumed to dispute with us that of Improvement, even in a Degree very much exalted above that of our Neighbours. And as there are numerous Inventions, too tedious to be recited here, which a short Retrospection gives us a right to lay claim to: So the particular Improvements which our English Manual Artists

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tists only have made to the Arts of Weaving, Gloss-making, Iron, Steel, and all sorts of Metallick Works, Cabinet-making, Naval Architecture, Watch-making, &c. are so Prodigious, that the Traveller who only takes a view of the most finished pieces of all other Nations, (not excepting even those to whom we owe the Arts themselves) if he judges impartially must really be surprized to find them such clumsy indigested Lumps as they appear, when compared with the performances of our meanest Artists: It is this which hath at once raised the Envy, and occasioned the fraudulent practices of other Nations; who by repeated vain Essayes finding themselves unable to equal us, are resolved to revenge their pretended injury by the basest deceit: Hence it is that not only the Watch-makers of Geneva, but those of France as well as other Countries, make bold with the Celebrated Names of Tompion and Quare to put off their Worthless Performances at a high Rate, which if no better paid for than they deserve, would for ever remain in the Hands of their Makers. Nor is this the only particular in which the English Artist is injured abroad: For throughout Europe the best Manufactures which the Shopkeeper can shew are either English, or such as are made in Imitation of them, and Knavishly sold as such to the

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great Prejudice of the Ignorant Buyer.

If it be asked whence this Supereminence proceeds ; I answer, That the Wise Indulgence of our Constitution, tenderly encourages Foreign Artists to settle, and consequently distribute their choicest Secrets amongst us, their property being always firmly secured to them, and our Courts of Justice making no distinction betwixt a Native and a Foreigner, but always considering the Cause without the least Respect of Persons; an Impartiality very rarely found in other Nations. Besides, I cannot help owning that our Manual Artists seem to be endow'd with a greater share of Judgment or a better Taste than their Neighbours, to Evince the Truth, and prove the Happy Effects of which, to avoid a tedious Enumeration of Particulars, the Traveller as well as the Merchant is able to testify, that tho' France formerly furnished us with Hats, Stuffs and several other Manufactures, yet Paris it self is obliged to own that they are at present stocked with much better from England than they can make at home.

Venice which not many Ages since was very Famous for supplying all Parts not only of Europe but of the whole World with its then unparallell'd Glass, is now Content to buy it of England. And whoever of late Years pretends to the making of all Optical Glasses
and

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and Mathematical Instruments, it is out of Dispute amongst Judges in what Country the best are to be found.

All which considered it would be as impertinent as unnecessary to urge the undoubted Advantage which may accrue from a Judicious Comparison of our own, with the Methods of other Nations; since to that it is to be presumed we owe the greatest part of the Excellencies which we can pretend to: Wherefore it cannot be very ungrateful to the English Workman, to have the Opportunity here offered of comparing his own Practice with the Theory and Practice of all Europe besides.

The Translator desires the Candid peruser would not expect accuracy in Terms of this Art, since he freely owns his Ignorance in it, and was only animated to this undertaking by the great Character some Master Dyers (both French and Germans) gave the Book which hath been Printed in High Dutch as it is, three times within this two Tears, besides the latter part its having been several times Printed alone. He was indeed unwilling that England should want so useful a Book; and believing that it was not very easy to find a Dyer which understood both German and French, or had either leisure or opportunity, or perhaps thought it worth his while to learn,

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them, he therefore perswaded himself that an indifferent Translation being better than none, he had a sort of right to be excused by his Generous Country-men, for whose Advantage he undertook this Difficult Task.

A D V E R T I S E M E N T.

A Treatise of Japanning and Varnishing, being a Compleat Discovery of those Arts, with the best way of making all sorts of Varnish for Japan, Wood, Prints or Pictures; the Method of Gilding, Burnishing, and Lackering, with the Art of Gilding, Separating, and Refining Metals, and of Painting *Mezzo-tinto* - Prints, also Rules for Counterfeiting Tortoise-shell, and Marble, or for staining or dying Wood, Ivory and Horn: Together, with above an Hundred distinct Patterns for Japan Work, in Imitation of the *Indians*; for Tables, Stands, Frames, Cabinets, Boxes, curiously Engraven on Twenty four large Copper-plates: By *George Parker*, Varnisher and Japanner.

A
T A B L E
O R
ABRIDGMENT
O F T H E
Articles Contained
I N T H I S
INSTRUCTION.

First Part.

- Article. 1.* **O**F the Five Principal, or Simple Colours.
2. Which are Blew, Red, Yellow, Brown and Black.
3. How the Stuffs ought to be prepared.
6. That they ought to be well cleansed.

Se-

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Second Part.

8. Blew is composed of Woad ; a slight sort of Woad and Indigo mixed together, in Proportion as follows, viz. 6 pound of Indigo to every bail of Woad.
9. Indigo ought to be prepared or corrected, being alone a bastard Dye.
11. One pound of Indigo ought to be used, to a hundred Weight of slight Woad.
12. *Indian Wood* ---- Brasil and Orseille falsify the Blew.
13. How to brighten and enliven Blew.
15. Seven sorts of good Reds.
16. *French* Scarlate.
17. Crimson
18. Madder Red.
19. Half Grain.
20. Half Crimson.
21. *Rouge de Nacarat* of Flocks, or the pale Orange Colour.
22. *Dutch* Scarlate.
23. Brasil Red a bastard Dye.
24. Yellow, composed of *Spanish* Broom, and Turmeric : Yellow Wood also yields another Yellow.
25. *Sarette* and *Gonistrolle* make also another sort of Yellow.
26. Brown is prepared from the Root, Bark and Leaves of the Walnut-tree and the Nut-shells : Soot used for Phillamorts and Ox-Colour.
27. *Garouille* for Rat Grey.
28. Trentanel, Malherbe and Soot forbidden.
29. Black Dye composed of Galls, Sumach, *Rodoul*, *Fovite* ---- *Coperas*, *Indian Wood*, Yellow Wood and Verdigrease.
30. Cutlers dust, filings of Iron or Copper, absolutely forbidden in Black, and all other Dyes of Wools and Stuffs.
31. *Indian Wood* --- forbidden in boiled Stuffs, and *Orseille* permitted in some Colours of low-priced Stuffs.

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Third Part.

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36. ----- of Crimson.
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50. ----- of Blew and half grain.
51. ----- Blew and half Crimson.
52. ----- Blew and Pale Orange or Flock-Red.
53. ----- Blew and *Dutch* Scarlate.
55. ----- Blew and Yellow Green.
56. ----- Blew and Brown.
57. ----- Blew and Grey.
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62. Red and Brown.
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67. Art of Dying ought to be divided into two parts, viz. the Great or Good Dye, and the lesser Dye

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68. The necessity of this Division.
69. To hinder the falsification of Dyes.
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81. Nor the Dealers deliver Stuffs which ought to be Dyed by the Great Dye, to the lesser Dyers,
82. What ought to be done in Towns where there is but one Dyer.
83. 'Tis necessary to have two Dyers in every Town.
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85. Master peices of the Good Dye. Good Dyers Widow, Son, Daughter, what Priviledges belong to 'em.
86. Apprentiship, Service, Master-piece necessary to the lesser Dyers : Widows and Children of the lesser Dyers.
87. Apprentice or Journey-man robbing his Master incapacitated for ever being Master, and punished if he works clandestinely for his own advantage.
88. None but Masters of the Great and lesser Dye allowed to Dye or redye. Hatters may Dye their Hatts, and Clothiers their Wools for mixture with only a Walnut-tree Dye.

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Eighth Part.

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FINIS.

Errata.] Pag. 49. l. 17. for Tallow, r. Spelter.

A
Perfect Discovery,
OF THE
ART
OF DYING.

Part I.
Of Silk Dying.

Of the Preparation of Raw Silk.

FOr every Pound of Raw Silk, take $\frac{1}{4}$ of a Pound of Sope; first put the Silk into a Bag, or so make it up, that its tangling may be prevented, then let them boil together for two Hours. After which it must be very well cleansed, and so it is ready to Dye of all sorts of Colours, being first Allomed.

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To Prepare Raw Silk.

FOR every Pound of Raw Silk, take $\frac{1}{4}$ of Green or Black Sope, with which the Silk must be very well, and thoroughly smeared; put it into a Linnen Bag, and then let it boil for six Hours. After which, take out the Bag and let the Silk cool, that it may the better be Handled; then Rince it in a River or running Water for $\frac{1}{4}$ of an Hour. Beat the Water out very well and rince it again, then dry it, and it is ready to Dye. This Preparation is absolutely necessary to all Raw Silks, before they can be Dyed.

How the boiled Silk must be Allomed.

IN Proportion to every Pound of Silk, take $\frac{1}{4}$ of a Pound of Allom, melt it in a little Kettle or Skillet, and when melted, throw it into a Tub of Water, into which put the Silk to steep, where let it lye a whole Night. The just Proportion of Silk and Allom abovementioned, must be carefully observed.

Of Red Silk Dying.

How to make the Preparatory Liquor or Suds, wherein the Silk must be steep'd before it be Dyed Crimson.

FOR every Pound of Silk, take four Handfuls of Wheat-bran, put it into the quan-

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quantity of about two Pails of Water; first boil them, then put the Liquor into a Tub, letting it stand a whole Night, clarify it, and take half of the Water, into which put $\frac{1}{2}$ a Pound of Allom, $\frac{1}{4}$ of a Pound of Tartar of Red Wine, beaten to an impalpable Powder; and $\frac{1}{2}$ an Ounce of Turmerick also beaten to a fine Powder; let them boil together for a quarter of an Hour, stirring them very well; then take the Kettle off the Fire, and immediately put in the Silk, covering the Kettle very close, that none of the Steam may Evaporate; let it stand for three Hours, after which Rince the Silk very well in cold Water, then beat it very well upon a Block, and let it dry. After which take $\frac{1}{4}$ of a Pound of Galls, beat them small, put them into a Pail of running River or Rain Water, boil them a full Hour, take the Kettle off the Fire, and when it is become just cool enough for your Hand to bear it, put in the Silk, where let it remain an Hour, then take it out and dry it.

To Dye Silk of a Crimson Colour.

TAKE the soaked or Prepared Silk, and for every Pound thereof, weigh out one Ounce and a half of Cochineal, which beat to Powder, and pass it thro' a Hair Sieve; put it into the remaining Pail of Liquor last mentioned, hang it over the Fire again, then with the Liquor put it into a Brass Kettle, covering it very close that no dust get in, hang it over the Fire again,

and add one Ounce and a half of White Arsenick, and two Ounces and a half of Tartar, both beaten to a fine Powder; let them boil together for a quarter of an Hour, take it off the Fire, and after it hath stood a very small time, put in the Silk, stirring it about very well, that the Colour be not variegated when the Liquor is cold, wring the Silk out, and if it is not tinged enough, hang the Dye over the Fire again, and put in the Silk after 'tis beaten, as before. After the Silk is Dyed, it must be rinsed first in Hot Suds made of Water, and $\frac{1}{2}$ an Ounce of Venice Sope, in proportion to every Pound of Silk, dissolved in it; and afterwards in cold River Water; then beat it upon a Block, and hang it to dry, upon which being spread abroad, wound and managed according to Custom, it becomes of a very good Crimson. If you would Dye Crimson from a Violet Ground, a third part of the Quantity of the Ingredients may always be abated; that is a Pound of Silk so grounded, requires but an Ounce of Cochineal, as much of Arsenick, and two Ounces of Tartar.

A Cochineal Crimson Dye.

After the Silk is well boiled or prepared, to every Pound of Silk, take Eight Ounces of Crude Allom, and after that is dissolved, lay the Silk in the Liquor for the space of one Night; next Day let it be very well rinsed, and afterwards Dyed as follows, viz. Take a Kettle of fair Water,
and

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and to every pound of Silk, put in together two Ounces and half of Cochineal, beaten very fine, three Ounces of beaten Galls, three Ounces of purify'd Gum, $\frac{1}{3}$ part of an Ounce of Turmerick, and boil the Silk in this Liquor : Two Hours after which, let it remain in it a whole Night, and next Morning wring it and dry it.

A Cheaper sort of Red.

TAKE to every Pound of Silk, one Pound of Brasil, boil it and percolate it, then boil the Wood afresh, adding cold Water to it; wave or turn the Silk about in it, and take it out of that without wringing, and stir it up and down in the other Liquor, till it hath sufficiently imbibed the Tincture, then add a little Pot-ashes, or put them in cold Water and turn the Silk up and down in it, and when 'tis red enough, rince and dry it.

A Dove Crimson.

THE Silk being first Allomed as above directed, clean Rinced and hung upon Poles, then get a Kettle (well scoured) full of clean Water, and in proportion to every Pound of Silk put in one Ounce of Cochineal; stir the Silk in the Liquor and let them boil one Hour, after which let it be Rinced, wrung out and dried. Particular Care must be taken that the Silk is not parti-color'd or of different Colours, by taking

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the Dye better in one place than another, wherefore it must be put in when the Liquor is Lukewarm only.

A slighter sort of Dove Crimson.

TAKE to every pound of Silk a quarter of a Pound of Brasil, let it boil, and percolate it as above, then pour cold Water into it, till it becomes Lukewarm, then stir the Silk in it till it hath extracted the Strength of the Dye or Liquor, which then throw away, and again put fresh Water and then a little Pot-ashes to it; thus do we let it dissolve, stir the Silk in it, rince and dry it.

A Crimson with Orseille.

TAKE a clean Kettle, fill it with fair Water, and to every pound of Silk put in twelve Ounces of Orseille, stir the Silk about in it, and wring it out; then to every Pound of Silk dissolve a quarter of a Pound of Allom, and a handful of white Arsenick. Leave the Silk in this Liquor till next Morning, and then let it be carefully wrung out and dried: that done, in proportion to every Pound of Silk, take two Ounces of Cochineal, 2 Ounces of Galls, 2 Ounces of Gums and a little Turmerick, and let it boil with the Silk in it about two Hours, after which put in a little Zepsie, leave the Silk in it all Night, and in the Morning, rince and dry it according to Art.

A Blood Colour.

After the Silk hath been soaked, as above directed, take to each Pound of it, $\frac{1}{2}$ a Pound of Allom, a quarter of a Pound of Tartar, both pounded small, and boil them in the quantity of a Pail full of the Preparatory Liquor, a quarter of an Hour; then put in the Silk, letting it continue here two Hours, after which rince it and beat it upon the Block, then hang it out and let it dry. This done put into the quantity of a Pail of Water, a quarter of a Pound of powdered Galls; set it on the Fire, and when it is become so warm that you can just bear your Hand in it, put the silk in, where let it remain two Hours; after which take it out and dry it. All which done, take one Pound and half of good Brasil, and some Wheat-Brán Water, put the Brasil in a Linnen Bag, and that with the Water into a Kettle, cover 'em close, boyl 'em together, take the Kettle off the Fire and let it stand a whole Night; then put in a quarter of an Ounce of Potashes and boil it again for an Hour, then pour on as much River Water as the Liquor. Take out the Bag of Brasil and put in the Silk when 'tis a little scummed; cover the Chaldron very close, letting it remain there half an Hour, then wring it out, rince it clear in River Water, wring it out again, and let it dry, and if it be not enough dyed, boil the Dye again and put in the Silk once more and clean it with Sope, as in the Crimson Dye,

and then rince it in River Water, and you will have a beautiful Red.

Madder-Red.

The Preparatory Liquor made as for the Crimson.

PUt half a Pound of Madder into the quantity of a Pail of River Water, boil it a full Hour, and take particular Care that it doth not boil over; decant it into a Fat, adding half an Ounce of Turmeric, and stirring it about with the Silk; when it is cold put in the Silk, and when you take them out, rince them very well and beat them upon the Block; then take half a Pound of good Brasil Wood, and boil in about a Pail full of the Preparatory Liquor, a full half Hour, then pour it off into a Fat, into which put the Silk, and after cleanse or scour it as with Sope, then rince it in River Water, &c. according to Art.

Another Madder Red.

CLean the Kettle very well and put into it clean Rain-water, and the Silk being first Allomed and prepared as above, to every Pound of Silk, take one Pound of Madder, four Ounces of Galls, and put them with the Silk into the Suds, not suffering it to boil; and after it hath remained half an Hour in the mentioned Liquor, rince it, beat it and hang it upon the Sticks; then rince it in a Tub of cold Water with a few Pot-

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Pot-ashes, and if the Dye is finished, rince it and dry it.

Fire Colour.

TO one Pound of Allomed Silk, take half a Pound of Brasil, tye it up in a Bag and lay it in Liquor for half an Hour, when take it out and put in an Ounce of beaten Turmerick; let the Dye dissolve, and when it is cold take out the Silk and put the Bag in again, with some Lye, boil it also again; then take out the Bag and put in the Silk, leaving it in till it's cold, then rince and dry it.

Flesh Colour or Incarnadin.

TO every Pound of Silk, take a quarter of a Pound of Brasil, let it boil; pass it through a Sieve and pour fresh cold Water upon it: While it is warm put in the Silk, moving it about till it hath drawn all the Strength out of the Dye, then rince and dry it.

A paler Flesh Colour.

THIS Dye must be made just as the last mentioned, only the same quantity of Ingredients will Dye two Pound of Silk in this Dye, that are used for one in the other, without any Galls.

The

The Beautiful Spanish Flesh Colour or Carnation.

TAKE the Silk, after 'tis prepared and Allowed as for Crimson, then to every Pound of Silk take four Pound of Wild Saffron, which put into a thick Bag, throw them into several Waters, and work it so long till the Water comes from it clear; then take the Saffron out of the Bag, squeeze and rub it with your Hands till it be dry, putting it into another Vessel; after which in proportion to every Pound of Silk, take four Ounces of Pot-ashes and rub them well into the Saffron in the clean Vessel; after which, if necessary, it may be yet rubbed with a little more Pot-ashes. All which being done, divide the Saffron in two parts; take a Bag so thick that no Pot-ashes can pass through, when it is tyed up; put one part of the Saffron into this Bag and pour clean Water upon it in the Kettle, till the Strength of the Saffron is boiled out. Then for every Pound of Silk, take half a pint of Lime Juice, and divide it into two parts, and to each part of Saffron, add one part of Lime Juice; then take the dry Silk and stir it up and down in the Kettle, wherein the loose part of the Saffron is, for the space of an Hour; then let it be very well wrung and passed thro' the Kettle where the Bag is, and for an Hour continually stir'd; then let it be wrung again and dryed in a dark place, and not
in

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in a clear Light; and it will be of your desired beautiful Colour.

Pearl Colour.

TO every Pound of Silk, take one Ounce of *Orleans*, dissolve it in Water and wave the dried Silk in it till it Lathers, but it must not boil; then rince and beat the Silk clean, and take to every Pound of Silk, four Pound of Wild Saffron very well pressed as above, and four Ounces of Pot-ashes, with half a pint of Lime Juice. The *Italian Carnation* or *Flesh Colour* is prepared the same way.

Flame Colour.

The Silks being first Boiled, Rinced, Beaten and Dried.

FOR every Pound of Silk, take two Ounces of *Orleans*, dissolve it in warm Water, and wave the Silk to and fro in it, so long that it is just ready to boil, which it must not be suffered to do; then rince and beat the Silks, after which to every Pound of Silk, take six Pound of Wild Saffron prepared as above, in the *Spanish Incarnad-in*, four Ounces and a half of Pot-ashes, two quarterns and a half of Lime Juice; all which must be prepared as both the former.

O-

Orange Crimson.

Clean the Kettle very well and put in clean Rain-water, then to every Pound of Silk, take four Ounces of Pot-ashes, four Ounces of *Orleans*, pass them through a Seive into the Kettle and dissolve them very well; then the boiled and Allomed Silk (first well rinsed from the Allom) must be stirred about in it and boiled, then wrung out, rinsed and beaten; then for every Pound of Silk, take 12 Ounces of Galls, which boil two Hours, and then let them cool for two Hours, and afterward lay the Silk to soak in it for three or four Hours; after which take it out, wring, rince, beat and dry it.

Orange Colour.

Lay the White Silk in Allom Water in the same manner as the Yellow, then take the eighth part of a Pound of *Orleans*, dissolve it the space of one Night in Water, add one Ounce of Pot-ashes, boil it for half an Hour, then add one Ounce of beaten Turmerick; stir it very well, let it stand a little while, and then put in the Allom'd Silk, and let it remain there one two or three Hours, according as you desire the Colour should be light or deep, rince it in a fine Sope Suds, till 'tis perfectly clean, then beat and dry it.

Isa-

Isabella Crimson.

Rince and beat the Prepared Silk very well, then stir it about in the same Liquor in which the Orange Colour is dyed, and so you will have a fine *Isabella*. Then let it be well rinsed, wrung and beaten, then lay it in the Gall Suds which the Orange hath before been in, for three or four Hours; after which rinse and dry it very well. If you have no Orange Suds, take for every Pound of Silk one Ounce of *Orleans*, half an Ounce of Pot-ashes, and dye it therein like the Orange; then Gall, rinse and dry it.

A slight sort of Purple.

CLap the Silk into the slighter red Dye, but increase the quantity of Pot-ashes to turn it to Purple, then rinse and dry it.

Crimson Violet.

The manner of Purple.

THe Silk must first be boiled and Alomed, as for Madder Red; then put a sufficient quantity of clean Water into the Kettle, and for every Pound of Silk, take an Ounce of Galls, an Ounce and half of Cochineal beaten to a fine Powder, an Ounce of Gums; boil them together as you do the Crimson Dye, then lay the Silk to soak in it for one Night, after which

which, cleanse it and you have a good Purple.

To reduce it to Violet.

YOU must boil the Silk in the blew Dye Suds, as often as you please, according as you desire it to be dyed, Light or Deep; then let it be rinsed and dried, and you will find it of a beautiful Colour.

Violet Dye.

FOR every Pound of Silk, take one Pound of blew or Provence Wood, boil and stir the Silk in it, as in the Red Dye, put in the last Suds a few Galls, then rince and dry the Silk.

A very good lasting Violet.

FROM the following Dye are Composed the best Tawnies, Grey and Crimson Goat Colours. This Violet is prepared as follows, for every Pound of Silk, take one Pound of Galls, and one Pound of Blew Wood. The Silk must be put in when the Suds are cold, for the colder the Suds, the blewer the Violet Colour, which must always be blewer than the Tawnies. Let it lye one Night in the Suds, and in the Morning rince and dry it.

Violet Brown.

ALlom the Silks as for Tawny, and for every two Pound of Silk, take two Pound of Provence Wood, boil it in a Bag a full Hour, then take it out, put in the Silk, boil it an Hour, then take it out and put in the Bag again; then rince it in a Lye as above made, without Bole Armeniac, and after that in running Water.

Crimson deep Tawny.

THe Silks first prepared, clean the Kettle, and for every pound of Silk, put in one Pound of Galls, one Pound of Madder, half a Pound of Blew Wood, and boil them together with the Silk for an Hour, the Wood being put into a Bag to prevent its hanging in the Silk. Let the Silk remain a whole Night in the Liquor, in the Morning take it out, wring and beat it well, then rince it again; after which beat and dry it.

Kings Colour.

PUt a sufficient Quantity of Water into a clean Kettle or Copper, and for every Pound of Silk, take twelve Ounces of Madder, twelve Ounces of Galls; boil the Silks with them an Hour, and after they are taken out let them be a little brouned, and then dried.

A slighter sort of Tawny,

IS prepared in the same manner with the Red, only with this difference: to every Pound of Silk, take one Pound of Brasil Wood, and the eighth part of a Pound of Provence Wood, manage the Silk as in the Red and dry it.

Crimson Tawny with Cochineal.

THe Silk being first Allomed and prepared as in the Crimson; take a clean Kettle, fill it with fair Water and some blew Wood Suds, of each a like quantity, and then for every Pound of Silk, put in one Ounce of Galls, one Ounce and half of Cochineal; after which the Silks (being first very well rinsed) must be put in and carefully stirred about to prevent variegating or spotting, because the Provence Wood Suds is apt to spot if it be not very violently stirred, and then let it continue one whole Night in the Suds, after which rinse and dry it.

Tawny.

THe Silk being first laid in a strong Allom Water for twenty four Hours, for every Pound of Silk, take one Pound of good Brasil Wood, boil it in a Bag two full Hours, then take it out and let the Liquor stand till you can just bear your Hand in it; then
put

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put in the Silk, and let it continue there an Hour, then take it out and dry it; boil the Dye again, put it in again as before, and then Rince it very clean: Then take Bole Armeniack, beat it small and mix it with Beech-ashes, to be made into a Lye, which strian two or three times through a Cloath; make it Milk warm, and then put in the Silk: when it is deep enough dyed, Rince, Beat and Dry it.

A Lasting deep Tawny.

Clean the Kettle very well, then fill it with Water, and for every Pound of Silk, put in one Pound of Blew-Wood, one Pound of Galls; let them boil an Hour, and then fill it up with Gall Water, and while it is hot put in and stir the Silk, letting them continue in till next Day, then Rince and Dry it.

Crimson Musk Colour.

Clean the Kettle and fill it half full of Water, and to every Pound of Silk, take a quarter of a Pound of Yellow-wood, tye it up in a Bag, and put it into the Kettle and let it boil very well, add to the Yellow-wood, in proportion to every Pound of Silk, one Ounce of Blew-wood and boil them together, then put in one Pound of Galls, fill up the Kettle with stale Gall Water; after which put in the allom'd and cleaned Silk, stir it about very well, and
C leave

leave it in the Dye one Night ; next Morning, Wring, Rince and Beat it, and then Rince it again in warm Water and Scheiet , and being deep enough Dyed, Cool, Wring, Rince, beat and hang it out to Dry.

Crimson Goat Colour.

CLean and put Water into the Kettle as above, and for every Pound of Silk, put in $\frac{1}{8}$ of a Pound of Yellow-wood, one Ounce of Blew-wood; tye it up in a Bag and let it boil, adding thereto one Pound of Galls; then put in the allomed and prepared Silks, stirring them very well and leaving them a whole Night in the Liquor, the Kettle being filled up, as before in the Musk Colour, with old Gall Water, next Morning take them out, and Rince, brown and dry, as usual.

Blew Dye for Silk.

MAke a Lye of three Pails-full of River or Rain Water, and clean Beech-ashes; put into a Tub that may be close covered, two Hand-fuls of Wheat-bran, the eighth part of a Pound of Madder, the eighth part of a Pound of White Wine Tartar beaten to Powder, one Pound of Pot-ashes, half a Pound of Indigo beaten small, stir it very well with a stick every twelve Hours for fourteen Days, till it tinges a sort of Green, and when the Dye is grown bright it must be stirred every Morning ;
lay

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lay the Silk in a warm fresh Lye, wring it out and stir it about in the Dye some time afterwards, letting it hang in the Dye, according to the Custom of Dying, and besides the Blew Copper, there ought to be another Copper full of Lye, that when the Silk is wrung out of the Dye, it may be rinsed in it, and after it is wrung very clean out of that, it must be rinsed again in River Water, beaten and dried as usual. If the Silk be moistned in this latter Lye or Suds before it is dyed, there is no need of the first abovementioned Lye. Several sorts of blew either lighter or darker at pleasure may be dyed with this Dye, according to the time they are left in it, and when the Copper grows low you may refill out of the Rinsing fat putting in a proper quantity of Lye, but when the blew Copper or fat grows weak then put in $\frac{1}{4}$ of a Pound of beaten Indigo, $\frac{1}{2}$ a Pound of Pot-ashes, $\frac{1}{2}$ an Ounce of Madder, one handful of Wheat bran, $\frac{1}{4}$ of an Ounce of Powder'd Tartar, and let it stand 8 days without using it, stirring it every twelve Houres and then dye with it as before.

How to prepare a Blew Dye.

TAKE first a Kettle which will hold a Pail full of Water, set it over the Fire, put in a handful of unslaked Lime, two Pound of Indigo, one Pound of Pot-ashes, boil them together an Hour, letting them dissolve. Then clean up a Copper which must be enough

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to hold a Tun of Water, put in two Pound of Madder, two Pound of Bran, two Pound of Pot-ashes, boil them a little and let them settle, and pour the Indigo through a sieve upon them, next percolate the Lye also into the Fatt, but the Indigo especially must be very well digested and dissolved, and the Copper filled with Water, covered close and a fire made under it; suffer it to grow Warm not Hot, stirring it about every two Hours till it ferments, and as soon as it begins to melt or digest, it also begins to turn Yellowish, and then you may Dye with it taking care that your hands are very clean, and free from all sort of grease. When you have Dyed with the Suds, you must afresh strengthen them with Pot-ashes, but not too much or too little, for if you are guilty of either extream, the whole Copper full of Dye is spoiled. Neither ought you to Dye too often at one time, but betwixt every time you Dye, the Liquour must be very well stirred.

*An Excellent Liquor to make the Blew Suds
* work in case it happens that they will not
through some defect.*

TAKE a quarter of a Pound of Madder, a quarter of a Pound of Pot-ashes, two handfuls of Bran; boil them together, and pour the Liquor into the Blew Suds, stir it well about and it will make it Work; and if it be too much fatned with ashes, then hang a bag of wheat flower in it, and that will attract all the fatness to it, and if
it

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it be yet defective in any particular, add to it a small quantity of Salt-peter, and that will bring it to fermentation, as will also a little grounds of Beer which indeed is one of the best remedies.

To Dye Blew.

THe Silks must be first boiled, beaten, rinsed and prepared, whilst White, without Allom, then boiled in the blew Suds and wrung out, and dryed, as the Greens are.

Pearl Colour.

PUt fair Water into a clean Vessel, and to every Pound of Silk take a quarter of a Pound of sope, and let the Silk boil in it for two Hours, then pour some rain Water in a Vessel, to which add a bowl full of the blew Lye, or if that be too much you may use half the quantity only at pleasure, then rince and dry the silk.

Yellow Silk Dyes and first Blossom Yellow.

DYe it in the same manner as Gold Colour, then heighten it with Orange Dying Suds, after which rince and dry it.

Limon-Colour.

THis Dye must first of all be tenderly handled; and done in weak Suds, and may be regulated by comparing the Colour

lour with a Limon, which when done rince and dry it.

Gold Colour,

Must be Dyed as the Straw Colour is, only when it is become reasonably deep, put it into the last Suds of the Orange Liquor, and stirr it therein so long till you are sure tis grown deep enough, then rince and dry it.

Straw Colour.

THe Silk being first Allomed and rince, for every Pound of Silk, boil one Pound of Broom flowers for a quarter of an Hour, then pour it into a Tub which must be large or small in proportion to the quantity of Silk, adding to it an equal quantity of Water, and after you have stirred the Silk in it, fill the Kettle again with Water, and boil it a quarter of an Hour, then put in the Silks after they're wrung out of the first into this second Suds, and if occasion require a stronger must be yet made, and the Silks stirred therein, till the colour be sufficiently heightened, then rince and hung out to dry.

Yellow Dye.

TAke a clean Kettle, and for every Pound of Silk, take Six Ounces of Galls, and two Pound of Yellow-Wood; let the Yellow-Wood boil an Hour before you put in the Galls,

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Galls, after which boil them together for half an Hour, and then the Silk, being first Allom'd and rinsed, is to be put in and stirred in the Dye, then wrung out of the Kettle, with a little Pot ashes, and after tis again wrung it must be put into the Dye again, and left there to soak a whole Night; in the Morning rince, beat, and dry it.

Fillemot Silk Dyes.

First Dye them in the last mentioned Yellow, then for every Pound of Silk, take $\frac{1}{4}$ Pound of blew Provence Wood, boil it in a Bag as usual, half an Hour, in the quantity of a pail of Water, take the bag out and let the Suds stand cooling till you can just bear your hand in it, then lay the Yellow Silk to soak for a full hour: Take it out, boil a sufficient quantity of powdered Soot in half a Pail of Water for half an Hour, after which put in the Silk, and when you take it out rince it in a good strong lye of Wood-ashes and after that in River Water; then hang it out.

Light Fillemot.

Take $\frac{1}{4}$ Pound of Galls beaten small, boil them an Hour in half a Pail of Water; then put in a quarter of a Pound of Vitriol, a handful of Soot beaten small, and so put the Yellow Silks into it till it grows dark enough; then rince and dry.

Crim-

Crimson Fillemot.

CLean the Kettle very well, fill it half full of Water, and for every Pound of Silk, take one Pound of Yellow-Wood, put it into a Bag and boil it in the Water for some time, then add one Pound of Galls, and fill up the Kettle with stale or old Gall Water if you have it, but if not, with fair Water; then take the Silks off the Poles (they being first Boiled Allomed and Rince) put them into the Kettle, and boil them an Hour, then soak them in the Liquor a whole Night, and in the Morning wring them out, Rince and Beat them, after which they must be a little brownd till they become sufficiently deep.

A slight Fillemot.

FOr every Pound of Silk, take one Pound of Fucet-Wood, and half an Ounce of Pot-ashes; boil them together, and in order to render the Dye deep enough, it should be brownd with a little black at Pleasure, when the Silks are deep enough dyed, Rince and Dry them.

Greens for Silks.

FOr every Pound of Silk, take a quarter of a Pound of *English* Allom, the eighth part of a Pound of White Wine Tartar beaten small, dissolve them together in hot
Wa-

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Water, then put in the Silk, letting it continue in a whole Night, then take it out and dry it; after which boil a Pound of Broom in a Pail and a half of Water a full Hour, then take out the Broom, throw it away, and put in half an Ounce of beaten Verdigrease, stirring it about with the stick, then put in the Silk for a quarter of an Hour, take it out and let it be cold, then put in one Ounce of Pot-ashes, stir them about and put in the Silk again, keep it there till you think 'tis Yellow enough, then Rince it out and let it dry; after which put it into the blew Dye Fatt or Copper, and let it remain there till it becomes Green and dark enough, then Rince it; and by this means you will have a good Green, to be beaten and dry'd. You may let it lye a longer or less while in the Dye, according as you would have the Green, lighter or darker, for at first you will have but a faint Green.

Grass Green.

L Et it first be Dyed Straw-Colour pretty deep, clean Rinc'd and close wrung together with Sticks, and then put about fifteen or twenty Hand-fulls of Skaines into the blew Dye Copper, tho' care must be taken that the quantity of Silk be proportioned to the strength of the Dye, and consequently that too many Skaines be not put in at once. When 'tis boiled enough, then take the Kettle off again, letting it rest for an Hour, after which you may work it again; and

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and so every Hour allowing the same Interval, but particular Care must be taken, that one Handful be ~~not~~ kept longer in than another, and when it comes out of the Copper, it must be very well cooled, rinsed and strongly wrung with the Sticks, and then dried.

Parrot or Parroquit Green.

THis being somewhat Lighter than the other, must be boiled in weaker Suds than the other, and as soon as it is Dyed, it must be wrung and dried as the other.

Green-Finch or Canary Bird Green.

THis must be dyed as the Green, but to the last Suds a little Provence-Wood ought to be added, adjusting the quantity according to the quantity of the Silk; after which it should be boiled in the blew Copper, wrung and Rinsed.

Olive Green.

THis must also be dyed as the Green, only the last Suds must be encouraged with a little Provence-Wood Suds till it is deep enough; then wring out as above.

Seladon Green.

THis Colour being very light and bright, must be dyed as the Sea Green, and boiled in weak Suds, and managed as the Green, and Dried.

Sea Green,

BEing very light, must be performed as the Limon Colour and thrown into the Blew Suds, then wrung and Dried.

Another Sea Green.

FOr every Pound of Silk, take three Ounces of Verdigre as beaten small, put it into good Wine or sharp Vinegar, let it dissolve a whole night therein, set it over the Fire and make it hot, stirring it about with a Stick, and then put in the Silk, (taking care it do not boil) and let it remain three, two, one, or half an hour, according as your intended Dye is to be a deep, midling, or light Green, then put some boiling hot water into a Fat or Tub, to which add half an Ounce or an Ounce of Soap, and make a Ladder, when it Froths 'tis then ready, then hang the Silks in it, let them drop afterwards, then Rince them in River water, beat them very well and dry them,

▲ *Black*

A Black Dye.

POUR Six Pails of Water into the Copper to which add two pound of beaten Galls, four Pound of Sumach, a quarter of a Pound of Madder, half a Pound of Antimony beaten to impalpable Powder, four Ox Galls, 2 Ounces of Gum Tragacanth; let them dissolve a proper time, then put in a convenient quantity of dry Alder Bark powdered, four Pound of Vitriol, one Pound and a half of Filings of Iron; then pour off the Water as above, and let them boil together two Hours, after which fill it up with a Pail full of Barley, or rather Malt Water, which the Brewers draw off, and let it boil again half an Hour; then put in the Silk, let it boil gently for $\frac{1}{2}$ an Hour, take it out and rince it in a Copper full of Water, and throw it again into the Dye; and after that rince perfectly clean in River Water, dry it in the Air; then put it in the Dye once more, and suffer it to boil gently for half an Hour as before; rince it also in the Copper as before, and afterwards in River Water, and when dry, take good Lye and add to it the eighth part of a Pound of good Potashes, rince the Silk very well in this Liquor and lastly in River Water, then dry it, &c. This Dye will also dye all sorts of Woollen Stuffs.

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An Additional improvement to the former Dye.

THe Silks being Dyed black as above, then take of Sal-Armoniac, Antimony beaten to Powder, two Ounces, Filings of Iron two Handfuls, put them together in a Copper that is drawn off, and hath been used before in the dying of the Silks; make it so hot that you cannot bear your Hand in it, that this compound help to the Dye, may the better penetrate. Then take the black Silk well dried, and put it into the Copper; let it continue an Hour, till 'tis thoroughly moistned, then draw it through Water, wherein a proper quantity of Gum Tragacanth hath been dissolved, taking Care it be thoroughly wetted; then dry it as usual.

To give a Lustre to Black Silks.

After they are Dyed, for every Pound of Silk, take one Ounce of Isinglass, which steep in Water, and pass the Silks through the Liquor and you will find them of a very beautiful Lustre.

To Dye Silk of a very fine Black.

TAke a Copper of two Tun of Water, put in a Sack and half of Bark, six Pound of Provence Wood, six Pound of Sumach, boil them two Hours, then percolate

late them into a Fat, throw away the Dregs, and fill up the Copper again, and then add fifteen Pound of beaten Galls, one Pound of Agaric, three Pound of Pomgrate Shells, two Pound of Calamus, three Pound of Senna Leaves, two Pound of Gentian, and two of Marjoram; boil them together two Hours, then pass the Liquor through a Sieve, into the other Dye, and let it digest four Days, stirring it often; then put it into the Copper, in which you intend to Dye, make a fire under it, and when it is hot, put in two Pails full of Lye, and boil all together very well, this done, add one Pound of Antimony, four Pound of Honey, half a Pound of Borax, one Pound of Litharge of Silver, half a Pound of Litharge of Gold, one Pound of Verdigrease, which beat together and put into the Kettle, and when the Dye is warm, throw in thirty Pound of Lock-Smiths Filings, twenty Pound of Gum, and twenty Pound of Coperas: let it stand and settle eight Days, stirring it when occasion requires; after which you may Dye with it, putting in a Quart of Brandy before you begin.

A Receipt to make a Dye good.

VWhen it happens that the Dye begins to work off, you ought to consider what time of the Month it was made, and what time Work'd: Then put three pailfuls of Water into a Kettle, and add to it two ounces of Borax, half a Pound

Pound of Agarick, a quarter of a Pound of Litharge of Silver, Four Ounces of Madder, half a Pint of Brandy, four Ounces of Verdigrease, boil them together an Hour, and then put them into the Dye, and leave it to settle stirring often for Fourteen Days : Then make a Liquor of two Pound of Senna leaves, two Pound of Gentian, one Pound of Agarick, two Pomegranate shells, let them boil together for two Hours, and then pour them into the Dye, when this is done the Dye will remain good for an Hundred Years and the longer you Dye with it, 'twil yield the finer Black Colour, but you must take particular care that no soap get into it, for that will spoil it past all help. But if you see any grease or Tallow fall into the Dye, let it cool and take it clean out, and if you cannot see it make the Ladle red hot and stir the Dye about, and that will consume or burn up any greasiness ; also fill two or three Canvass Sacks with Bran, and hang them in the Dye, while it is hot, and let it continue two or three Hours, then take the Sacks out and cover the Dye with Brown Paper, and that will attract all the greasiness to it. But when the Dye begins to decay, whenever you Dye you must strengthen and refresh it in the morning with six Pound of Gum, six Pound of Copperas, four Pound of filings and a quarter of a Pail of lye, and then dye with it three days six Pound of Silk at a time. When the Silk is dyed it must be boiled and Galled as follows. To every Pound of Silk take twelve Ounces of Gall,
boil

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boil them two Hours and then lay the boiled Silk (first wrung) in the Liquor for two Nights and a Day.

A Black Dye very useful to help or re-dye Hats, or other things which are apt to lose their Black Colour.

TAke a quarter of a pound of blew Provence Wood, boil it in half a pint of Hamburg Beer till it be half consumed; then add half a quarter of a Pound of Vitriol, half an Ounce of Verdigrease, take out the Wood and put in half a quarter of an Ounce of Gumm Tragacanth, let it stand a while and use it when you will, by taking a little Brush which you dip into it, and so streak it over the Hat, Wool or Silk: you will find it affords a fine lasting black.

How to stiffen Cassa and the like sorts of Silk, and give them a beautiful lustre.

TAke half an Ounce of Gum Arabick, a quarter of an Ounce of Gum Tragacanth; beat them very well, dissolve them in Water, and then boil a Pound of Linseed in Water so long till it becomes glutinous, then put in the Gum Water, suffer it to be hot, strain it through a Cloath, and with a Sponge smear it on the wrong side of the Silk, taking care that the piece of Silk be stretched, both long and broadways, otherwise it will be apt to rumple.

A good Grey.

MAY be prepared as the Tawny Dye, and after the Silk is wrung out, rinsed and beaten, if it be browned it becomes a good Grey.

Silver Colour.

THE Silk being first boiled and rinsed, taken off the Sticks and put into a Vessel with cold Water; then put in a little of the former rinsing Water and a few Galls, in proportion to the quantity of Silk, which you must stir about in the Liquor till it is browned, and then Rince and dry it.

Silver Green.

TAKE fair Water, and for every Pound of Silk put in twelve Ounces of Galls, boil them two Hours, then pour them into another Vessel, and stir the Silks in it about a quarter of an Hour, let them soak in it one Night; and in the Morning wring out, rince, beat and hang them out upon the Poles; then make another Tub of Liquor, with a sufficient quantity of Provence-wood Suds and cold Water, stir the Silks therein a quarter of an Hour, then let them be browned with Vitriol or Madder, or Copperas, and wrung out and dried.

D

Brim-

Brimstone White.

THe Silks boiled as in the Pearl Colour, with the Addition of a little blew Lye, for every Pound of Silk, add fix Ounces of Sope, rince the Silk therein, wring them very well out of the Dye, and so hang them upon very white Poles, and after that in a close Room, setting a Shovel or Pot of Fire under them, upon which strew Brimstone, shut the Room close, and next Morning dry them in the Air.

To Scent or Perfume Silks.

WHen the Silk is Dyed, for every Pound of Silk, take an Ounce of Orris, dry it well, lay the Silks in Rose Water in a thick Sieve, and betwixt every Row, strew powder of Orris, and shut it up close in a Box or Chest till next day, and the Silk will emit an agreeable Odour.

A

Perfect Discovery,
OF THE
A R T
Of D Y I N G.

Part II.

*Of the Dying of Wool, Woollen Cloaths and
Stuffs.*

IN Dying of Woollens three things require our consideration, first the cleaning the Wool, secondly the preparing them to receive the Dye, and thirdly the Dying its self.

Of Flower or Starch Water.

HAng two Pails-full of fair Water over the Fire and put in two Hand-fulls of Starch or fine Flower, boil it a quarter of

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an hour; then put a Pail of cold water into a little clean Tub and mix them together till the former becomes cold : this done put in a little Agarick and a little broken or dissolved Leven, and let it stand in order to grow four.

A Bran Water for slight Stuffles.

TO two Pail-fulls of Water take two Hats full of Wheaten Bran, boil them together for a quarter of an hour, then pour it into a clean Tub, where pour on a Pail of water and throw in a Hand-full of Leven.

The *French* call these Waters *Eaux Sures*, i. e. Acid or Sharp Waters, and by how much the sourer so much the better they are and fitter to attract the fatness of the Stuffles and dry it clean off, to make them limber and correct the roughness of the water.

How Stuffles must be Allomed, particularly for Reds.

FOR every Pound of Stuff, hang Rain or running-water over the Fire, adding one third part of the Starch or Bran-water ; put in two Ounces of Allom, one Ounce of Tartar, when it boils and froths, first skim it, then put in the Stuff, stir it very well about for an Hour, then take it out and rince it.

The quantity of Allom must always be double to that of Tartar; some Dyers reject Red Wine Tartar, and use only White, others esteem the Red better especially for
Crim-

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Crimsons and all brownish Red Dyes, and indeed it is very advantageous in all good Stuffs that require a little Red preparatory ground before they are Dyed Black.

What sort of Water is best to dye with.

FOR the less valuable Stuffs and Dyes, running or River Water, whether of great Rivers or Rivulets, is commonly used. But the difference of Rivers is very well worth observing, for some are very clear and bright, others very thick and muddy, the first are the best, but the last if they are drawn out and left to settle for a Day and Night, are also useful, tho' not so good as the other.

In the next place we ought to consider whether the Water be hard and rough, or smooth and soft, and the proof to distinguish their Nature, is very easily made in the boiling of Vegetables, particularly Pease or Lentils, of which if you take a measure and divide them equally into two parts, set one over the Fire in running or River Water, and the other in Spring Water, and let them boil an Hour, or an Hour and half, and that Pot where the Peas are softest, to be sure, had the softest Water. But above all, we ought to avoid Nitrous Waters, and if we are forced to use them, the following Correction may be very proper.

To Soften Harsh or Hard Waters.

WHEN the Water is Nitrous, or somewhat a Kin to the nature of Lime, 'tis utterly unfit for Dying, but if we are oblig'd to use it, the following process will rid it of all the ill qualities.

Fill a great Copper with the Water, put in two or three Hands-full of wheat Bran; heat a Brick or piece of Plaister very hot, throw it into the Copper, cover it very close, let it stand twenty four hours, and then draw it off, it being perfectly fit for use.

Or,

THROW always a handful of Wheat-bran into the first Suds, and let it boil, and you will find it corrects the Water, and renders the Stuffs more Limber.

*Of several Particular Dyes.**To Dye Madder Red.*

TAKE three Pound of Allom, two Pound and half of white Tartar, a quarter of a Pound of Fœnugreek, two Quarts of Wheat Bran, boil all in the Copper, then put in the Stuff and let it boil two Hours and half, after which take it out, cool it very well, and hang it out for one Night; then to dye it, take seven Pound of Madder, an Ounce and half of Aqua Fortis, a Pint of Wheat

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Wheat Bran, put them into the Copper, stir them very well about, and when the Stuff hath been very well rinsed in the Dye, then wind it very swift upon a Roller, and tumble it about the Copper for an Hour at least, taking Care that the Fire keep it boiling hot; after which take it out and rince it.

To Dye Red.

First take three Pound of Allom, two Pound of Tartar, half a Pint of WWheat Bran, in proportion to twenty three *English* Yards of Cloath, then put more WWater into the Copper, and add 6 Pound of good Madder and a Glasse full of Vinegar, let the Dye be hot and then put in the Cloath, stirring it about till it hath sufficiently imbibed the Red Colour, then rince it out, and you will find it of a beautiful Red, always pre-supposing that the Cloath hath been first boiled three Hours in Allom and Tartar.

Genua Madder Red.

TAke three Pound of Allom, one Pound and half of Tartar, boil the Stuff in it an Hour and half, then pour off the WWater and put fresh WWater into the Kettle; make a Liquor of ten Pound of Madder, four Ounces of Pot-ashes, and some Urine, and boil it off when it hath dissolved one Night.

Nutmeg Colour.

TAke three Pound of Allom, and half a Pound of Tartar, let it boil two Hours, then take out the Stuff, let it cool, then add one Pound and half of Visel Wood or Yellow Flowers, three Pound of Madder, one Pound of Galls, put them all together into the Kettle, and let them boil an Hour and half, and wind the Stuff very close upon the Roller, and if it be Red enough take it out and cool it ; then put in two Pound of Copperas, and if you can dissolve it with warm Water, you may add a little more, then put in the Cloath, letting it continue till it is enough, then rince it as usual.

Another Nutmeg Colour.

TAke of green Walnut Shells two or three Quarts, or else Walnut-tree Root, put it into the Copper, and when it boils put in the Stuffs and Rollers, and in a convenient time take them out and cool them, and let the Ingredients boil again, then put in the Cloath again, boil it half an Hour, take it out and cool it ; then add a Pound of Galls, three Pound of Madder, put them together with the Stuff into the Copper, boil them an Hour, then take the Cloath out and cool it ; then put two Pound more of Copperas into the Kettle, stir it well, put in the Cloath again, let the Fire be well
lookt

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lookt after, and the Stuff stirred about till the Coulour is deep enough ; then rince it, &c.

Clove Brown.

TAKE three Pound of Allom, two Pound of Tartar, boil them in the Copper, then put in the Stuff, boil it two Hours, take it out, and put in together five Pound of Madder, and a Pint of Wheat Bran, stirring the Liqueur three quarters of an Hour till it is boiling hot ; then draw off the Water putting in Fresh Water, and put in a Pound of Galls, and the Cloth ; which boil for an Hour, then take it out again, and put three Pound of Copperas into the Kettle, and then put in the Stuff again, and stirr it bout till it is sufficiently Dyed, then rince it.

Cinnamon or Nutmeg Colour.

TAKE two Pound of Allom, half a Pound of Tartar, and some sharp Lye, boil the Stuff an Hour therein, then pour off the Water putting fresh into the Kettle, make the Flora of three Pound of Madder, a sufficient quantity of Tartar-ashes, three Pound of Alder-bark, boil them together and Dye the Cloth for an Hour. Some Dye it pale, but if you would have it deeper, add two or three Pound of Copperas, and you will have a very good Nutmeg Colour.

An.

Another Nutmeg Colour.

First boil the Allom and Tartar, as for the red Dye, then half Madder it, and add to the Madder a quarter of a Pound of Galls to fifteen English Yards of Stuff. Care must be taken that at most it be not above half Dyed red, after that pass it through the Copperas till it is dark enough, then rince it, after that pass it through the Yellow Dye, and you will have a beautiful Nutmeg Colour.

Deep or Brown Red.

IF you would Dye a Brown-red, after you have Dyed the Stuff Red, mix flaked Lime and Brasil together, boil them, and then pass the Stuff through it once or oftner. Several use Pot-ashes Lye, but that sometimes renders the Dye too deep or Brown, and Lime is really preferable. You must take particular care in this Operation, for if you Work it too slowly it is very apt to spot.

Hair Colour.

HAir or Goat Colour is of several defferent sorts, as Light Reddish, or Yellowish; so that indeed 'tis impossible to determine, which is preferable, each of them being saleable, and in good Esteem, and every Man Dyes which he pleases. Some do it with Alder-bark, Walnut shells, green Oak chips, other-

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otherwise they crumble like dust. They take for their first suds two Pound and half of Allom, and one Pound of Tartar, and boil it for an Hour and half, then pour off the Water. Others first prepare the Stuffs with Galls and Copperas, and Dye them Red, and then Yellow: to Redden them, they use seven Pound of Madder, and, as I have said, then pass them through the Yellow Copper and after that through the Copperas and Gall suds, so that whatever of these Colours you would have Dyed, should be ordered after a pattern the Workman should Follow.

To Dye English Red.

TAke three Pound of Allom, two Pound of White Wine Tartar, three Ounces and half of Ceruse, a pint of Wheaten Bran, and boil the Cloth in this Liquour an Hour and an half, and leave it to soak a whole Night in the suds; and after it is rinsed out, take for every piece of Cloth, Six Pound of good Madder, two Ounces of Orlean, an Ounce and half of Termerick, two Ounces of Aquafortis; Let the Cloth remain three quarters of an Hour upon the Roller, and you will have a good English Red, then rince it out.

Brasil Crimson.

DYe it as Flesh Colour is done, only it must be deepned, then pour fresh Spring Water
into

into the Copper, to which add, Lye of Potashes, and Lye made with Calcined Tartar; Stir them well together, and let the Cloth soak two Hours, stirring it a bout every quarter of an Hour, and you will have a very good Crimson: But if the Cloth doth not take the Dye kindly, you ought to add more Lye.

To Dye Scarlet.

FOr every forty Pound weight of Stuff, take three Pound of Madder, one Pound and half of Allom, three Ounces of White Wine Tartar, three Ounces of Arsenick, two Ounces of Ceruse, and boyl the Cloth in it one Hour and a quarter, then throw away the Water and put fresh into the Kettle, adding a quart of Wheaten-bran, then rince the Stuff in River Water, then pass it it through the branny Water, take it out and make a Liquor of three Pound of Verdigreace, an Ounce and half of White Wood called Immick, and rince the Stuff in it several times, the Immick shavings being before well stirred about, then put into the Yellow Liquour, five Pound of Madder, two Ounces of Storax, and suffer them to dissolve for one whole Night, after which the Stuff must be stirred about for one Hour, always taking care to keep a good Fire under the Copper, all which well observ'd will produce a very good Scarlet.

Spanish

Spanish Flesh Colour

TAKE four Ounces of Ceruse, three Ounces and half of Arsenick, one Pound of Calcin'd Tartar, a Pound of Allom, and boil the Cloth two Hours in this Liqueur, then take it out leaving the fuds over the Fire; next Morning prepare a Liqueur from two Pound of good Leather shreds, a quarter of a pound of Orlean, the eighth part of a Pound of Turmerick, and an Ounce and half of Aqua Fortis.

Flesh Colour.

AND when you would Dye Silk or Linnen Cottons with Brasil Wood, take a quarter of a Pound of Brasil, and divide it into two parts, and in one part, for a pair of Cotton Stockens, take one Ounce of Galls, and to the other part add an Ounce of Allom, and pass them through each Dye twice, till the Dye become clear as Water, and then 'tis wonderful to see how beautifull the Flesh Colour appears.

Another Flesh Colour.

TAKE three Pound and a half of Allom, three Ounces of Arsenick, four Ounces of Ceruse, and boil the Cloth an Hour in it; pour off the Water, since the stuff in running Water, and make a Liquor of eight Pound of Madder and two Ounces of

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of sal Armoniac, suffer them to dissolve for one Night, then boil a little and add one Ounce of Pot-ashes, then pour some of it upon the Stuff in the other Kettle, and as often as you pour it on so often you Dye, so that you may leave off when 'tis light Dyed, or deepen it at pleasure, and if you would have it very deep, mix an Ounce and half of Borax with the Pot-ashes, and that will give it a beautiful Lustre also.

To prepare for the Indigo Dye.

First you must have the ground of a Dye, and put it into the Kettle, and make it as warm as you can bear it; then prepare a Lye of Pot-ashes.

First fill your Kettle with Water, and make it boil, then put in the Pot-ashes: let it boil, then put in a bowl full of Bran and three Hand-fuls of Madder, let all boil a quarter of an Hour, then take and remove the fire, then beat the Indigo to an impalpable Powder in a Morter, then pour some of the Lye upon it, let it settle and pour the Indigo Lye into the Blew Dye Copper, then beat the remainder again, let it settle and pour the Lye into the Blew Copper, and so proceed till you have turned your proper quantity of Indigo to Lye, which must all be powred into the Copper, then follows,

The

The Indigo Dye.

First of all, to every quarter of a Pound of Indigo, add one Pound and half of Pot-ashes, a quarter of a Pound of Madder, three Hand-fuls of Wheat bran, suffer it to boil the Eighth part of an Hour, then let it settle, decant the clear part of the Suds or Liquor, and bray the Indigo very fine, which mix with a sufficient quantity of fresh Woad or stale Indigo, then pour the Suds upon it and let it boil twenty four Hours, and 'tis ready to Dye withal.

To prepare the Dye Copper.

First throw in a Pint of Wheaten bran, then the Woad, after that two Pound of Madder, then fill the Copper up with Water, and let it boil three Hours, then pour it off into the Fatt, let it stand till it comes to a due consistence, then boil the Copper full of Water, and pour it into the Dye Suds, and covering it warm, let it settle for two Hours, then look after it every Hour, till it becomes Blew, then according to the quantity of Stuffs you have to Dye, put in three or four Pound of Indigo, and three Pound of Pot-ashes, let it settle and Dye with this Liquor, taking care always to stir it; cover it close and let it stand two Hours after, every time you have Dyed with it, after which you may Dye with it again, adding a sufficient quantity of Lime,
if

if you use it often, always letting it rest two Hours and then adding the Lime and stirring it.

To Dye Brimstone Tellow.

TAke three Pound of Allom, one Pound of Tartar, three Ounces of Salt, and boil the Stuff in these Materials one Hour, throw away the Water, then make a Liquor of Yellow Broom, laying it in the same order as Straw, in Brew Houses, then add Lye-ashes, and draw the Stuff through the Dye three or four times very quick, to do which dextrously four Men are required; and you will find it of a fine Crimson Colour.

To Dye Lemmon Colour.

TAke three Pound of Allom, three Ounces of Ceruse, three Ounces of Arsenick, and boil the Stuff one Hour and half, pour off the Water, then put in Fresh, and in the same Kettle make a Liquor of sixteen Pound of Green Dyers Wood, three Ounces of Pot-ashes, two Ounces of Turmerick, let them settle and boil, then pass the Stuff quick through it; and you will find it of a Lemmon Colour.

To Dye Olive Colour.

IT must be done as the Brimstone Yellow, afterwards prepare Suds of Galls and Coperas, (but not strong) through which
pass

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pass the Stuffs two or three times, according as you desire the Dye, Light or Deep; and it will produce an Olive Colour.

To Dye Black.

TAKE two Pound of Galls, half a Pound of Brasil, two Pound and half of Madder, boil the Cloth three Hours with them, then take it out, cool it very well, then add an Ounce and half of Sal-Armoniac, and boil the Stuff gently half an Hour, rolling it upon the Roller three times every quarter of an Hour, then take it out and cool it; after which add two Pound and an half of Coperas, one third part of a Pound of Brasil, a quarter of a Pound of Tallow; boil the Stuff in it very well an Hour and half; and you will find it of a beautiful black Colour.

How to prepare the Silver Dye.

FIRST for every fifteen Yards of Stuff, take half a Pound of Allom, and three quarters of Fœnugreek, boil them half an Hour, then add one Pound of Pot-ashes, and half a Pound of Brasil, and boil the Stuffs therein a quarter of an Hour.

To give Stuffs a beautiful Lustre.

FOR every Piece of Stuff weighing 8 Pound, take a $\frac{1}{4}$ of a Pound of Linseed, boil it half an Hour, then percolate it through a
E Cloath

Cloath, and let it stand till it is turn'd almost to a Gelly; then take an Ounce and half of Gum, dissolve it twenty four Hours, then mix the Liquors and put the Cloath into this glutinous mixture, take it out, dry it in the Shade and press it; if doing this once be found not sufficient, repeat the Operation; and you will find it give a very beautiful Lustre to the Stuffs.

Madder Red.

FOR every twelve Pound of Stuff, take a good handful of Wheaten Bran, one Pound and half of Allom, three quarters of a Pound of Tartar, half an Ounce of Turmerick, boil the Stuffs in them two Hours, decant the Water, fill the Copper again, and rince the Stuffs, then add one Pound and a half of Madder, the third part of which must be before dissolved, and then put into the Suds, to which must be added a little beaten white Starch and Vinegar, then roll the Stuff upon the Roller in it, till it is deep enough dyed.

Another Red.

HANG over the Fire an equal quantity of Starch Water, and Rain Water, and to every Pound of Stuff, put in two Ounces of Allom, one Ounce of beaten Tartar; and when it boils put in the Stuff, letting it boil for one Hour, and stirring it well about; then take it out and rince it very

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ry well, then hang the Liquor over the Fire again, and for every Pound of Stuff, put in three Ounces of Brasil, a few Pot-ashes, boil it half an Hour, then put in the Stuffs and boil them till they are sufficiently tinged ; upon which take them out, and dry them as usual.

To Dye Madder Red a light Tawny.

SOak the Red Stuffs one or two Nights in the Black Dye, roll them and work them well about, to prevent their growing Black ; and you may take them out when they are dyed of a Tawny, as light or dark as you would have them ; and rince them, &c.

Brown or Tawny.

Put a Handful of Madder into a Kettle-full of hot Water, stir it very well about, let it stand a while ; moisten the Stuff therewith, then roll it up and put it into the Kettle upon the Roll, and when you find that the Colour does no longer fall upon it, then add yet two handfals of Madder, and let it cool, and when you find it boiled to a half Red Colour, throw in a Pail-full of the Black Dye into the Madder Suds, stir them together, clap a Wood Fire under the Kettle, for when it hath its proper Heat, it turns the better to brown ; if it be not dark enough, throw in another Pail of the black Dye or more, till it becomes

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as you would have it ; then work the Stuff in it very well upon or with the Roller to prevent its spotting. This is an experienc'd and approved Dye.

Another sort of Tawny.

First give the Goods a Blew Ground, which must be either Light or Deep, according as you design the Tawny. Then Allom them, letting them boil an Hour in the Allom Water ; let them stand till cold, rince them clean out, pass them through the Madder Red Dye, and they will turn to a Light Tawny as Light or as Deep as you desire, according to your Blew as above: then rince and clean them out.

Deep Tawny.

First Dye the Stuffs to a Madder Red, then take the Dye off the Fire, and put a quart of Black Dye into it, for every Pound of Stuff, heat it and put the Stuffs therein, and work it so long, till it hath sufficiently taken the Dye ; then cool it, and it becomes a lasting Dye.

To Dye Tawny.

Dye the Goods Red, then boil them in the remainder of the Black Dye, boiled up (after it hath been used) till they are dark enough, then cool and rince them : But if you desire to Dye a Light Tawny, take half
of

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of the Black Dye and half Water, and it will be consequently so much thinner and weaker.

Ox-blood Colour.

First Tinge the Stuffs Yellow, with a quarter and half of Madder to a Pound of Goods, Allom and work them till they are sufficiently beautiful, then rince them well out, and put into the Kettle a Tub of stale Urine, and boil it again till they take the Dye; then roll the Stuffs three or four times through it; and rince them very clean.

Clove Brown.

TAke clear fine Flower Water and heat it, then put in for every Pound of Stuff, two Ounces of Allom, one Ounce of Tartar in Powder, boil them together; then put in the Stuff, stirring it about for an Hour, then cool and rince it, then heat some Fair Water, and for every Pound of Stuff, take two Ounces of Brasil; boil it half an Hour, then put the rinsed Stuff into it, and work it so long, till it is sufficiently tinged Red, then take it out, and add to the Dye an Ounce of Vitriol, dissolve it very well, then work the Stuffs so long in it as you shall judge it proper; then rince it out.

A Purple Dye.

FOr every Pound of Stuff, put into a sufficient quantity of Fair Water, two Ounces of Allom, one Pound of Tartar, and boil the Cloath in it an Hour, take it out, cool, and rince it; then warm some more clean Water, to which add three Ounces of Brasil Wood; boil it half an Hour, then work the Stuffs in it till it becomes as Red as desired, upon which take them out, and put two Ounces of Pot-ashes into the Dye, stir it well about, and put in the Red Stuff once more, roll it Off and On the Roller, that it do not spot, then cool and rince it.

Crimson Flesb Colour.

FOR every Pound of Stuffs, take a proper quantity of Water, into which put half a Pint of Starch Water, and then the Cloth, with the usual quantity of Allom and Tartar, Allom it, rince it out clean and tinge it Yellow, then take of Fair and Starch Water equal quantities, boil and scum it, pour a little of it into a very clean Kettle, to which for every Pound of Stuff, add an Ounce of Chochineal, boil it in the Kettle, and when it boils add half an Ounce of Tartar, and fifteen Grains of Turmerick, half boil it with the Cloath, till it becomes bright enough, and next day rince it out.

A very Good Crimson.

FOr every Pound of Wool take half an Ounce of Cochineal, half a quartern of Oatmeal or Wheaten Bran, having first dissolved it Eight days in Water that it may become sour, and when you intend to Dye, pour the Bran Water into the Kettle, and then (having the Night before dissolved the Cochineal in warm Water) clap a good Fire under the Kettle to heat the Liquor, and put it into it by little and little till there is no more of the Solution left, stirring it about all the while; when it begins to boil, then add a proportional quantity of Lye and pass the Cloth through three times, or take half a quartern of wine Lees or Ashes which throw into the warm Suds, and pass the Goods through it till they have sufficiently taken the Dye.

Another Crimson.

ALlom the Goods as usual, heat a sufficient quantity of fair Water, and for every Pound of Wool or Stuff take an Ounce and a half of Cochineal and as much Tartar, the former being as before first sufficiently dissolved, boil them together, put in the Goods to be Dyed stirring them about for an hour and half, then cool and rince them out.

An Extraordinary Good Crimson.

FOr every Pound of Woolen ware, take half a pail-ful of clean rain Water, put in two Ounces of fine White-wine Tartar, beaten very fine, and two Ounces of the best white Allom, boil them together an Hour, stir the Ware about, then hang it out, let it dry and rince it very well in clean Water. Then take clean rain Water, and after 'tis heated in the Copper, take out a pail or a little tub-ful, into which put an Ounce of Cochineal, beaten to an impalpable Pouder, dissolve it a little, and then pour it into the Kettle again, taking care the Cochineal be rinsed very well out of the pail; then take of Powdered White-wine Tartar an Ounce and half, of red Arsenick beaten to Powder a dram, stir them well together, put them into the Copper and then the Ware after them, adding a quarter of an Hour after two Ladles full of Wheaten Bran, stirring them well together continually, let them boil one quarter of an Hour; then take the Ware out cool and rince it. But note that when you put in the bran, you must put in a spoonful of burnt Wine lees, which will give the Ware an extraordinary Lustre.

Purple Crimson.

First Dye your Goods Light blew, still Observing that the lighter your blew the finer your Purple. Then take Cochineal

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neal and Tartar of each an Ounce and half, and work it as other Crimfon, and you will find it become a very Beautiful Colour, and by the Adding of a little Bran-dye the lustre will become remarkably clearer and brighter.

Lavender Crimfon.

THe Ware must first be Dyed, of a Tawny faint blew, then rinsed clean, and the Suds thrown into the Purple Suds, after they have been used in Dying. These Suds being of very little value, and otherwise useless, produce a good Lavender Dye at a cheap rate.

Lavender Grey, or Lavender Colour.

HEat a proper quantity of clean Rain-water in the Copper, and for every Pound of Ware take an Ounce of blew Lack beaten small, of beaten Galls, and vi-triol half an Ounce of each, boil them together and put in your Ware, let it boil half an Hour. This Dye is proper for flight Ware, as Stockens and course Stuffs, but not for the better sort.

To Dye a Beautiful Violet.

HEat clear rain Water, and Allom your Ware with half a Pound of Allom, two Ounces of Tartar, and a Handful of Madder, for every four Pound weight of Ware,

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Ware, stir these ingredients well together, and when they are dissolved and begin to boil, put in what you intend to Dye, boil it half an Hour, take it out cool and rince it. Put fresh Water to your Liquor, and add a quarter of a Pound of brown Wood in a clean bag, boil it an Hour and half, then put in your Ware again, and boil it an Hour and half, take it out, then put into the hot Suds one quarter of a Pound of Verdigrese, it being first dissolved in warm Water, stir it well about, then put in your Ware again, stirring it about for a quarter of an Hour, till it begins to boil; then take it out, cool and rince it, and you will find it of as beautiful a Violet Colour, as ever was Dyed.

Another Violet Dye.

ALlom your Work as usual, with one half Starch Water, and for every Pound take two Ounces of Allom, one Ounce of Tartar, boil them together an Hour, then hang other fresh Water over the Fire, and when it is hot, for every Pound of Goods take two Ounces and half of Brasil shavings, and a sufficient quantity of great Potashes; boil them together a quarter of an Hour, then put in your Goods, keep them in till they take the Dye, then cool and rince them.

A Scarlet Dye.

FOR every two Pound of Goods to be Dyed, take two Ounces of Tartar, one Ounce of Sal-armonicak, pulverize them, and when the Water begins to boil, put them in, then take two Ounces of White Starch, half an Ounce of Gummi Gutta, put them both into the Water, then add one Ounce of Cochineal, let them boil and lastly put in an Ounce and half of Aqua-fortis. This done put in the Ware, boil them altogether, take it out, cool and rince it.

Another Scarlet.

ALLom your Goods as for Crimson in River Water, and after it hath boiled two Hours, let them hang a whole Night, without rincing, but rince them out in the Morning. To Dye them, take clean Bran-water, boil and Skim it clean, then for every Pound of Ware, put in an Ounce of Pulverized Tartar, half of which must be first mixed with half an Ounce of Cochineal, and when the Liquor where the remaining half of the Tartar is hath boiled, then put in the Cochineal, &c. Boil them together, afterwards, adding half an Ounce of Aqua-fortis wherein a small quantity of Sal-armoniac, and not bigger than a Pea, hath been dissolved, which is to be put in when the Goods have boiled about a quarter of an Hour: then let them all
boil

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boil together for a little while, then cool and rince out the Goods.

A Good Scarlate.

SEt a Copper Kettle over the Fire with some Rain Water, then for every Pound of Ware, put into a Tin Pot an Ounce and half of Aquafortis, an Ounce and half of pulverized Tartar, and an Ounce of Sal-Armoniack: Or if you have a little Scarlate Liquor, put in a little Cochineal. After this put them into the Water, stir them well together, put in the Goods, boil them for one Hour, take them out, cool and rince them, then dye them as follows:

For every Pound of Ware, take one Ounce of Cochineal, two Ounces of Tartar, a quarter of an Ounce of Sal-Armoniack both pulverized, stir them very well; and put in the Work; boil it an Hour and half with the abovementioned ingredients, prepar'd as above, and Rain Water, rolling the Stuff upon the Roll as occasion requires, then take it out, cool and rince it, and you will have a beautiful Scarlate.

How to Dye a piece of Cloath of twenty six Pound weight, the English Madder Red.

TAke two Pound and half of Allom, one Pound of Pulverized White Wine Tartar, boil them in Water, and when it is proper to put in your wet Cloath, then put half a Pound of tempered Aquafortis into the

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the Suds ; then put in the Cloath, stir it about very well and very swift, boil it two Hours, and let it remain in the Suds twelve Hours, then rince it out.

To finish it,

TAKE four Pound of Madder, an Ounce and half of Gummi Gutta, an Ounce and half of purified Pot-ashes, one Pound of Wheat-bran ; mix them in Water and pour them with their Liquor into the Suds, then put in the Cloath, stir and work it as proper that it be not spotted, and you will find this an extraordinary Dye.

Another sort of English Red which is deeper.

BOIL your Ware to be Dyed, with two Ounces of Allom, two Ounces of Tartar, two Ounces of Aquafortis tempered with two Ounces of fine Tin, a quarter of a Pound of Madder ; this is the proportion to one Pound of Wool or Stuff, and ought to be augmented in proportion to the weight of the Cloath, only the quantity of Tin must not be more than doubled to twenty Pound of Ware, for a large quantity of Aquafortis may be as well tempered with two Ounces, as with a quarter of a Pound : Then boil the Cloath two Hours in it, stirring it as much as is proper, cool it in the Suds and rince it out. And,

To

To Finish the Dye,

FOr every Pound of Ware, take a quarter of a Pound of Madder, or $\frac{1}{2}$ a $\frac{1}{4}$ of a Pound, according as you would have the Dye deep, a $\frac{1}{4}$ of a Pound of blew Wood, $\frac{1}{2}$ an Ounce of Allom. Stir the Cloath very well in it, and when you find it takes the Dye, add half an Ounce of purified Pot-ashes, and stir the Stuff well about that it do not spot. This Dye appears very beautiful to the Eye, but all Wood Dyes are apt to stain very much, not only by Wine, Urine, Vinegar; but by dirt, foul water, &c.

Common or flight Crimson.

The Ingredients being proportioned, to one Pound of Ware,

TAKE two Ounces of Allom, two Ounces of White-Wine Tarrar, one Ounce of Aquafortis, tempered with half an Ounce of *English* Tin, a quarter of a Pound of Madder and a quarter of a Pound of Blew Wood. Boil your Stuffs well in the Liquor, let them cool, and rince them out.

To Finish the Dye,

TAKE a quarter of a Pound of Blew Wood, three Ounces of Pot-ashes, stirring the Stuffs very quick in the Liquor. This Dye looks very well and may serve for flight Stuffs, and those designed for Linings,

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ings, and kept from Sweat, Wet and Weather, but it quickly fades.

How to Dye a very fine Crimson.

FOr every eight Pound of Wool or Stuffs, boil six Gallons of Water or rather more, to which add eight Handfuls of Wheat Bran; let it settle for one Night, stirring it very well, and in the Morning decant the Liquor clear, or rather percolate it, that it may be perfectly clean: Take $\frac{1}{3}$ of this Liquor, and mix with as much clean Water, that the Stuffs or Wool may be worked commodiously in it. Boil this mixt Liquor, and put into it one Pound of Allom, and half a Pound of Tartar, boil them very well, then put in the Ware and let it boil two Hours, stirring it (especially if Wool) from top to bottom continually.

To Finish it,

BOil the remainder of the Bran Water with an equal quantity, or rather more fair Water, and when it boils thoroughly, put in four Ounces of Cochineal, and two Ounces of pure White Wine Tartar pulverized; stir it about, taking Care that it doth not run over or boil too fast, and when 'tis very well boiled, put in your Ware, and stir it about till you find that it hath equally taken the Dye in all places, then cool and rince it out.

To

*To Dye Scarlate or Nacarot (i. e. a lively Red)
the quantity of twenty seven Pound of Wool-
len Ware.*

THe Ware must be very well cleansed, then take two Pound of Tartar, six Ounces of Sal Gemmæ, four Ounces of Sal Armoniack, two Pound of Aquafortis tempered with Tin, three Ounces of Cochineal; when you put these into the Kettle, put in the Stuff also, and let them boil together half an Hour, then rince out the Ware.

To Finish it,

TAKE one Pound and a quarter of Cochineal, one Ounce of Sal Gemmæ, one Ounce of Tartar, half a Pound of tempered Aquafortis, and boil the Ware gently with all these Ingredients, then rince it out.

N. B. You may at pleasure use more of the Sal Armoniack, and less of the Sal Gemmæ: Also, if you take but one Pound of Cochineal, and the Goods be well stirred, cooled and rinsed, the Dye will be about as good as the other way.

A Scarlate Dye for one Pound of Wool.

TAKE two Ounces of Aquafortis, one Ounce of *English* Tin, two Ounces of White Wine Tartar, an Ounce and half of Allom, half a Dram of Cochineal, and
boil

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and boil the Wool with them half an Hour, then cool and rince it out.

To Finish it,

TAKE an Ounce and half of Cochineal; but if you would Dye Crimfon, add a little Allom, and a quarter of an Ounce, or less, of Sal-armoniack.

A Scarlet Dye, proportioned to three Pound of Wool.

TAKE four Ounces of tempered Aquafortis, four Ounces of Tartar, one Ounce of Sal-armoniack, one Ounce of Sal-gemma, one Ounce of Cochineal: boil the Wool with all these, half an Hour, then cool it and add to the Suds an Ounce and half of Allom, and when it begins to boil, to compleat the Work, put in two Ounces of Cochineal. This Dye is deeper and more enclined to Purple, than the former, and consequently better.

To Dye Sixty two Pound of Ware a Scarlate Colour.

TAKE two Pound of tempered Aquafortis, two Pound of Tartar, half a Pound of Sal-armoniack, three Ounces of Cochineal; boil the Cloath with these half Hour, then cool it, and put in to the Suds, one Pound of red or Roach Allom, as well as the Cloth a second time;
F boil

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boil them three quarters of an Hour, and so
cool and rinse it out.

To finish it,

Add two Pound of Cochineal, with
which boil the Stuff, a quarter of an
Hour, and you will find the Colour extraor-
dinary good.

To Dye a Lighter sort of Scarlate.

FOR every four Pound of Ware, take five
Ounces of Aquafortis, as much White
Wine Tartar, an Ounce and half of Cochi-
neal, boil the Goods to be Dyed with it
three quarters of an Hour, take them out,
pour fresh Water into the Kettle, and finish
the Work as follows.

Take three Ounces of Cochineal, three
Ounces of Starch, two Ounces and a half
of tempered Aquafortis, three Ounces of
Christal Tartar, an Ounce and half of
Gummi Gutta; boil the Water with these
ingredients half an Hour, and the Work is
perfectly done.

All sorts of Wool and Woollen Wares
must be well wetted before they are put
into the Suds; and this Caution is more
especially necessary in the Scarlate Dye.

To Dye a Natural, or Lively Crimson.

First the Ware must be well wetted,
and then for every four Pound to make
the

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the Suds, take two Ounces and half of tempered Aqua-fortis, three Ounces and half of Tartar, eight Ounces of Allom, an Ounce and half of Cochineal, with all which boil the Goods half an Hour, then cool and rince them.

To Finish the Dye.

TAKE four Ounces of Cochineal, three Ounces of Starch, three Ounces of White-wine Tartar, half an Ounce of White Arsenick; boil them together a full quarter of an Hour, then put in your Ware, boil it somewhat above half an Hour, or till it hath well and equally taken the Dye.

To Dye thirteen Pound of Woollen Ware, of a very deep Scarlet Flesh Colour.

TAKE two Pound of Aqua-fortis, tempered with eight Ounces of Tin; two Pound and half of White wine Tartar; half a Pound of Sal-gemma; four Ounces of Sal-armoniack: boil the Ware with all the ingredients half an Hour, then rince it out; and

To finish it;

ADD one Pound and a quarter of Cochineal, one Ounce of Sal-armoniack; boil the Ware with them a quarter of Hour, and the Colour will be very good.

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Another sort of Scarlet for Twenty Six Pound of Woolen Ware.

TAKE four Pouud of White Wine Tartar, one Pound of Allom, one Pound and half of Aqua-fortis tempered with Six Ounces of English Tin, two Ounces of Cochineal; boil the Ware with these an Hour, then cool and rince it.

To Finish it,

ADD one Pound and a quarter of Cochineal, boil it one quarter of an Hour, then put in the Ware and boil it a quarter of an Hour, then rince it out.

You may at pleasure use more Allom, in the preparatory fuds, as one Pound and half or two Pound; and you may also add, half an Ounce of Cochineal, namely two Ounces and a half, and use less of the Tin, as four Ounces.

To Dye Purple

FIRST the Ware must be blewed in the fuds, which hath been worked till it turn to a sort of a half Green, then boiled three quarters of an Hour, with twelve Ounces of Aquafortis, half a Pound of Sal-armonicack, two Pound of White Wine Tartar, two Pound of Roach Allom, and then rince out.

To

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To finish it,

FOR Twenty Six Pound of Ware, (to which proportion the fuds above are adjusted) take one Pound and a quarter of Cochineal, and if it be feared that will make it too red, it may be corrected with two Ounces of Pot-ashes, and three Ounces of Lacke. If the Aquafortis be tempered, or the VVork performed in a Tin Kettle, or less Sal-armoniack used, the Colour inclines the more to the Blew.

An English Liquor, to scowr Scarlet.

TAKE one Pound of Wheat-bran, boiled in as much Water, as is requisite to Work, ten or twelve Pound of Ware; at length add to it three Ounces of Allom, three Ounces of Florentine Orrice-root pulverized; boil them together, pour them into a clean Fat, or cooler, and let them settle till the Liquor is clear, then heat the said clear Liquour in a Kettle, and Scowr the Scarlate with it, and you will find a good Effect.

To Dye a good Crimson Violet.

THE Ware must first be Dyed a deep blew Green, then boiled as for right Crimson, rinsed very clean out of the fuds, and finished with three Drams of Cochineal, in proportion to one Pound of Ware; and so you will have a right good Colour. *A*

A Pearl Colour Dye proportioned to one Pound of Wool.

TAKE one Ounce of blew Lack, half an Ounce of blew Wood, half an Ounce of burnt Allom. The blew Wood being first boiled a quarter of an Hour in a Bag, and then taken out; the Lack sifted through a Hare sieve; the Liquor Skimmed, and very well Stirred, for a quarter of an Hour, and helped with a quarter of an Ounce of Pot-ashes.

A deep Fillemot Dye proportioned to fourteen Pound of Wool.

TAKE five Ounces of Galls, eight Ounces of Fucette or Virette Wood, four Ounces of Madder and one of Gummi Gutta: when the Dye is boiled, stir the Ware in it, till the Dye hath sufficiently penetrated it.

If you design it brighter, then use only three Ounces of Galls, and three Ounces of Madder, and add two Ounces of Virdigreece.

Or otherwise, take four Ounces of Fucette Wood, two Ounces of Galls, half an Ounce of Madder, and half an Ounce of Vitriol.

To Dye a Peace of Rash Musk-colour.

TAKE half a Pound of Galls, one Pound of Yellow VWood, one Pound of Vitriol; and stir the Stuff in it as usuall.

A

A Lasting modest and neat Purple brown.

THe Cloth (for slight Stuffs won't bear the price of this Dye) must first be Dyed blew, either Light or Dark in proportion to the Colour you desire to Dye, then boil it first with Galls and Madder, or with Galls alone: lastly with Copperas alone. When it is well boiled with Madder, or with Copperas and Madder, or when it is boiled with Galls alone, if it be perfectly finished, it will not take any stain from Wine, Vinegar or Urine.

On the contrary all Colours Dyed with Wood, as for Example the Red or the Blew, wherein Brasil is used, stain with the weakest Acids, which cause in them a very remarkable change. Yellow Wood indeed is a Sort of exception to this General Rule for its Dye do's not Change so soon.

A Dark Gray.

* The Translator supposes, he means that because there is no Wood directly so called in the German Language, and Walnut Tree is used in the Brown Dye.

FOr every Pound of Woolen Ware, take a quarter of a Pound of Copperas, and a quarter of a Pound of Brown Wood (or * *Walnut Tree.*)

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To Finish it,

TAke two Ounces of Brown Wood, and half an Ounce of Copperas.

A Musk Colour.

FOr every Pound of Wool, take two Ounces of Copperas, two Ounces of Allom, two Ounces of Tartar, two Ounces of brown Wood, and two Ounces of Madder.

To Finish it,

TAke again Brown Wood, Madder, Copperas, of each two Ounces.

Silver Grey or Silver Colour.

BOil the Ware with one Ounce of Allom, and one Ounce, of Pot-ashes, for every Pound of Ware let the Stuff lye in it; one whole Night and then boil it.

To Finish it,

TAke one Ounce of Sal-armoniack, one Ounce of Litharge of Silver, one Ounce of bright foot, half a Dram of Christal of Tartar; let them dissolve together for one Night, boil them an Hour, then pass the Ware through it

Flesh

Flesh Colour.

TAKE one Ounce of Tartar, and half an Ounce of Starch, for every Pound of Ware; boil them together in a little Water, and Skim them. Then add to them a quarter of an Ounce of Cochineal, a quarter of an Ounce of Starch, a quarter of an Ounce of English Tin mixt with an Ounce of Aquafortis, and an Ounce of Rain-water. First let the Water with the Tartar and Starch boil, and then throw in the other Ingredients and boil them together, then boil the Ware an Hour in the Liquor, and your Work is done.

Another Flesh Colour.

TAKE White Wine Tartar one Ounce, Starch flower and Juice of Limons, of each half an Ounce, Cream of Tartar one quarter of an Ounce, a little Turmeric upon the point of a Knife; boil all these in fair Water, then with half an Ounce of Cochineal, and a little while after with an Ounce of Aquafortis, wherein a Dram of Tin hath been dissolved, boil the Stuff an Hour in this Liquor.

Spanish Flesh Colour.

FOR every Pound of Ware take two Ounces of Tartar, a quarter of an Ounce of Cochineal, a quarter of an Ounce
of

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of Starch, to which add half an Ounce, when the former hath been a little while in the Suds. Then dissolve two Ounces of filings of Tin in three Ounces of Aquafortis in the Sun Shine, put the Cochineal into the Liquor by degrees, and when it boils, let it be followed by the Aquafortis, and a little while after by the Ware; boil it an Hour, pour off the Water, and add a quarter of an Ounce of Cream of Tartar, or the most subtile Tartar, half an Ounce of Limon Juice, half an Ounce of Starch, and half an Ounce of Cochineal, then boil it a quarter or half an Hour, according as you see occasion.

Crimson Tawny.

HEat the same preparatory Suds, as for the Crimson Dye, and stir into it of Galls half an Ounce, of Gum two Ounces of Copperas an Ounce and half, all pulverized; boil them till the Gum melts, then put in and Work, the Ware in it half an Hour, and you will have a beautiful and Lasting Colour.

To Dye Yellow.

Allom your Ware as usual for half an Hour. Then for every Pound, take half a Pound of Yellow Dye Weed, a Hand ful of Wood ashes, boil them a quarter of an Hour, then throw your rinsed Ware into the Liquor,
Work

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WOrk it, about till you find it well Dyed, then cool and rince it.

Gold Colour.

TAKE your Ware after it is Dyed Yellow as above, hang fresh Water over the fire, and for every Pound of Ware, take one Ounce of Fustel Wood, commonly called *Gelb Swane* or Yellow shavings, and a sufficient quantity of coarse Pot-ashes, boil the Dye half an Hour, then Work the Stuff in it.

Straw Colour,

THE Ware being first Dyed Yellow, throw into the Dye half a Pint of Urine, put it in, and Work it about as long as you think convenient.

Flame Colour.

FOR every Pound of Ware, take two Ounces of Fustel-wood, one Ounce of Pot-ashes, boil them half an Hour, then stir it very well after which put in your Ware, it being first Dyed Yellow, work it till the Colour pleases you, then rince it out.

Fillelotte.

PAs your Yellow Dyed Ware through the hot black Dye, and when it is cool rince it, still observing that the lighter the
Yellow

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Yellow is the lighter the Fillemott is to be expected, then hang fair Water over the Fire, and put in half an Ounce of Brafil Wood, boil it a quarter of an Hour, and then pass the Ware through it,

To Dye Green.

DYe the Ware first Yellow with Broom or Dye-weed, rince it well out, and while it is yet wet, pass it through the blew Dye, and Work it Light or Dark at pleasure, so that several sorts of Green may be Dyed the same way (the Stuff being always first tinged Yellow ;) as for example, Grass-green, Sea-green, Light-green, Brown-green, Iron-green, or whatever Green you desire.

A Sea Green.

FOr every Pound of Ware, take three Ounces of pulverized Verdigrease, three Pints and a half of Wine Vinegar, half a Pint of Beer Vinegar, stir the Verdigrease in it ; pass a pair of Stockins through the Liquor, then hang them out without rincing, let them Dry and then wet them in the Liquor again, and so dry them as before so oft till they are perfectly cleared from all sort of humidity.

A Brown or Iron Green.

HAng fair rain Water over the fire, and for every Pound of Ware put in pulverised Galls, and Gum, Brasil and Copperas, of each an Ounce and a half; an Ounce of Verdigrease; boil them well together, stirring them very well, then boil the Ware in it till it is to your satisfaction, and rince it when cold.

A Black Dye, which is often used with good success.

Fill your Kettle with very clear Water, and to Dyeten pieces of Frize or coarse Stuff, take two Pound and a half of right Turkish Galls, one Pound and a half of Brown wood, or Walnut Tree; boil them very well together, then put in the Stuffs and let them boil two Hours, and lye a whole Night in the Liquor, take them out and if you have any old Dye fuds, that hath before been used, pour it to the Gall Liquor and add two Pound of Copperas, let them throughly boil, then put in these Stuffs, boil them two Hours and leave them a whole Night in the Liquor, then rince them out and let them be very carefully and nicely Dyed; if it be in a Kiln, 'tis so much the better; rub them with a pumice Stone, and smooth them very well, then pour the Dye out of the Kettle and keep it, and repeat the mentioned Operation

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on in every particular; Iron the Stuff a little with a hot Iron, after which take Water, and two Pound and a half of Turkish Galls, one Pound and a half of Brownwood, and Dye them a third time after the same manner: and they will be black enough; but if you would have the Dye more bright and beautiful, take a Kettle full of fair clear Water, put into it half a Pound of Calcined Vitriol, and one Pound of Tartar, boil the Stuffs in this Liquor an Hour, and rince them out, then put fresh Water into the Kettle, and for every Piece of twelve Ells, put in half a Pound of Brown wood, and boil the Stuffs half an Hour, or an Hour, and if you would have the black yet finer, and better, then Dye it once in the Following Soot Dye.

The Soot Dye.

GALL the Ware with Alder Bark and Galls for three Hours, and to blacken the Gall fuds add lye and soot, boil the Ware in the Liquor two Hours, then add Copperas and leave the Ware in a whole Night, then rince it out.

*How to Dye a Peice of Stuff of fifteen Ells,
a Lasting brown or Iron Green.*

TAKE three quarters of a Pound of Al-
lom, half a Pound of Tartar, two Ounces of Calcin'd Vitriol; boil the Stuff in it half an Hour, rince it in clean Water,
and

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and when dried for the blew, you may throw away the Allom fuds.

How to blew it.

THe Frieze Fustian, or other Ware being blewed with Woad, light or deep according as you desire your Green to be of a light or deep brown, then it must be rinsed again and dried, to prepare it for the Following Yellow.

The Yellow.

TAke eight Pound of Broom, and keep it down in the Kettle, with a stick or hoop, that it do not Flote on the Top, boil in half an Hour, and when you would use it, add two quarts of sharp Lye, half an Ounce of flower of Brimstone, an Ounce and half of Verdigrease, then Dye your Ware once only, and you will find it of a beautiful brown or Iron Green; you may if you please, Dye your Stuff Green from a Lead Colour, and it will be deeper than the other, and last very well, but when 'tis Dyed with Brown Wood and blewed 'tis lighter, but is not so firm as the other.

How to Dye a Peice of Fustian, Frize, or other Goods of twenty five Ells, of a lasting Brown Violet Colour.

TAke three quarters of a Pound of Allom, half a Pound of Tartar, half an Ounce

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Ounce of Sal-armoniack, boil the Stuff in this Liquor two Hours, rince it in clean Water and dry in order to blew it as follows.

The Blew Dye.

DYE it a deep lasting blew, with Woad or Indigo, rince it clean and dry it.

Then follows the Brown Violet.

TAKE one Pound of Brasil boiled in a great Pot apart, and divide it into four equal parts; with a clean Ladle put the one part into the Kettle before the Stuff is put in, and add besides Salt-peter, and Sal-armoniack pulverized, of each one Dram; then pass the Stuff very well through the Dye, then dry it, then put in another part of the Brasil, adding to it a quarter of an Ounce of Galls pulverized, pass the Stuff through the Dye again, and dry it and so repeat the Operation twice more; and after the fourth time, you will find it of a beautiful Violet Colour, but observe that the fourth time you must use a clean sharp Lye in order to brighten the Luster, adding one Dram of Calcined Allom. This Colour may be produced from Brown-wood and a quarter of a Pound of Brazil, in four or five Operations, and twice adding Galls, but is not so durable as the other; but to Render it more lasting, Indigo and more Brown-wood may be added, and lastly it may be Browned with Brasil, so that indeed it is several ways to be done.

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How to Dye the same, and other Stuffs of a lasting Purple Dye.

THat the Stuff may have the better Lustre when Dyed, it ought, when White, to be very clean and free from all manner of spots or stains:

The Blew.

THE Ware must first be Dyed, to the depth of a Sky Colour, with Woad or Indigo, and then dried.

The Browning or deepening.

TAKE half a Pound of Brasil, boiled and divided into four parts, as before in the Violet brown Dye, and dyed time after time also the same way. To the first part of the Brasil, add one Dram of Salt-peter, and one Dram of Sal-armoniack pulverized. The second time add a quarter of an Ounce of pulverized Galls, and half an Ounce of *Paris-Red*, a sort of bastard Sandarac: The third time a quarter of an Ounce of Galls, besides Salt-peter and Allom, of each one Dram, and a quarter of an Ounce of Calcined Tartar: And the fourth time a quarter of an Ounce of Pulverized Galls, a quarter of an Ounce of Turmerick, one quart of sharp Lye: Thus you will find your Colour very beautiful. This Brown may be prepared very lasting, from *Scherbären*; it may also be done very cheap with Brown-wood, but not so lasting.

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How

How to prepare the Indigo Dye, for the Lye, in conjunction with the Provence Blew, and make it lasting for Stuffs, Silks, Woollen and Linner.

First of all when you undertake this Work, and are informed what sort of Blew your Ware must be Dyed. If it must have a deep Dye, it must first be prepared in Tartar and Vitriol, but for a light Dye in Allom and Tartar. Boil three Pound of Brown-wood in a Bag, in a Kettle of Water for half an Hour, then take it out and dry it, and let the Dye cool so much that you can bear your Hand in it; then use your Indigo and Ashes (as in the first Direction for Blew) with all the rest of the useful and remedying Drugs from Beginning to end as is directed.

Then as follows.

When the Blew Dye hath stood twenty Hours, and the Indigo come to its perfect strength, and begins to be blew; what you design for a dep Dye you ought to Dye first, and the lighter dye last: when you have worked the dye half an Hour, then let it rest an Hour, and so on as long as you Work it. If the Lye be too weak, you may strengthen it at pleasure.

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To mix the Provencce Blew with Woad for Silk, Woollen and Linnen Ware, and to improve the blew.

IN the preparation of Woad, you have been informed that it requires three Waters: so if you would use the Provencce blew with Woad and Indigo, in the first Water, you ought to put no Brown-wood, then you must consider how the Woad comes from the Lye.

For the next Water, boil one Pound of Brown-wood in a Bag, taking care there be no Bran in the Water: In the third Water, take two Pound of Brown-wood. But if you would have the Dye deeper, you ought to take care that the Dye be deeper in the first Operation, as is directed in the other preparation; and if it be deficient, you are instructed how to cure it in the Woad-preparation.

Then follows how to Dye a Piece of fifteen Ells Ash-Colour.

First Dye it Sky Colour with Woad and Indigo, then rince it out clean and dry it, then apply the following black: take four Ounces of beaten Galls, one Dram of burnt Allom, half a Pound of Vitriol, boil the Dye and the Stuff in it for half an Hour, then pass it through it, rince and dry it; then add to your Suds, three Ounces of Brasil before boiled in a Skillet a part, three Quarts of sharp Lye, half an Ounce of Rock-salt or Sal-Gemma, and you will

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have a beautiful Ash Colour. You may also prepare this Colour brighter with Galls, but if the Lustre be not good when taken out of the Woad or Indigo-Copper to try; Then add four Ounces of Sumach, Six Ounces of Vitriol, three Ounces of Madder, three Ounces of Salt, half an Ounce of Burnt Allom. But the first Ash Colour is the most beautiful and lasting; however 'tis left to your Choice, to use which you please.

How to Dye Silk or Wool of the Polish Red.

FOr every Pound of Silk take a Pail of Water and warm it, put in four Ounces of Galls Pulverized, and when it begins to boil, put in your Madder, which you must proportion according to the depth or Lightness of the Dye: Stir them together and Dye the Silk, a quarter of an Hour, whilst it is boiling; then put in some Potashes and Dye the Silk a quarter of an Hour, rince it out, and you have the true Polish Red.

Soot Dye or Hair Colour is prepared as followeth.

WHen the Ware is Allomed and Dyed Yellow, then take Galls, Brown-wood and Madder, and therewith Dye it to an Ash Colour, then add a little Copperas, and you have the Hair Colour.

N. B. This Dye is proper for Woolens, but not for Linnens. To

To Dye Stuff a Lasting Silver Dye.

TInge it a half light Grey in the Woad, rince it clean and dry it, but observe withal that the whiter the Stuff before it is Dyed, the brighter the Lustre.

To Black or deepen it, take an Ounce and half of Galls pulverized, four Ounces and a half of Vitriol, half an Ounce of Sal-armoniack, a quarter of an Ounce of Salt-peter, two Ounces of Madder, and prepare them as the Ash Colour abovementioned; and if you would have it incline more to the red, add two Ounces of boiled Brasil, two Ounces of sharp Lye, a quarter of an Ounce of Calcined Allom, and a Dram of Calcined Tartar; and it will appear very beautiful to the Eye.

How to Dye the Hamburg Black, supposing the Stuffs to be first Blewed with Woad, or Indigo, in a manner that is lasting.

TAke three quarters of a Pound of Tartar, one Pound of Vitriol, boil the Ware in it two Hours, then rince it clean, and dry it.

Blew it as followeth.

IF your Dye be either Woad or Indigo, yet you must give the Stuffs a deep ground, which will bestow a bright Luster. For the second blew, boil your Woad and

G 3

Brown

Brown Wood, and blew your Ware to the depth of Indigo, or to a sort of Iron Gray, and after this 'tis easy to Gall and Dye it black; but the Nicety lyes in the blewing. After the blewing, the Stuff must be rinsed clean and dried again. Then follows

The Gallling.

TAKE Six Ounces of Galls, two Ounces of Madder, a quarter of an Ounce of Calcined Tartar, and therewith Gall the Stuff one Hour not rinsed but dried, and then Galled a second time, the Suds being a little strengthened, or helped, as follows.

The second Gallling.

TO the remaining Suds, add half an Ounce of Galls, one Ounce and a half of Madder, one Ounce of Calcined Vitriol, one Ounce not yet of Gum Arabick. This done, the Stuff being not yet rinsed but dried, must be

Blackned in the Gall Liquor as follows.

BOil the Liqueur, then take one Pound of Vitriol first dissolved in spring Water, which must be poured into the Dye, then add to the Alder black half an Ounce of Galls, one Ounce of Madder, one Ounce of white Gum, one Dram of Mastick, and after you have Dyed the Stuff black in this Dye,

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Dye, rince it out clean and dry it, now, as well as after the second Blacking, which must be done as followeth: Take half a Pound of Vitriol, and immediatly afterwards, half an Ounce of Galls, one Dram of Mastick, half an Ounce of Gum Tragacanth, and both times, let the Stuff be an Hour a blackening, till it hath got a lasting Dye, and besides all, you may, if you please, add some Brown-wood to give it the better Luster, and preserve it from spoiling.

How to Dye Stuffs the Sumach Dye that it shall be very lasting.

TAKE a great Vessel and put in the Eight following Drugs, viz. Eight Pound of Alder-bark, Eight Pound of Sumach, twelve Pound of Oak-shavings, nine Pound of Vitriol or Copperas, two Pound of wild or Bastard Marjoram, Six Pound of Iron filings, as much Lye as is necessary, Six Pound of Walnutt Tree leaves, half a Pound of Calcined Tartar, two Pound of Salt and four Pound of small shott; put them all in, when the Water is hot, takeing care the Vessel be full, and daily look'd after. The Stuff must first be boiled in the preparatory Suds, composed of three quarters of a Pound of Tartar, and one Pound of Vitriol, for the space of an Hour and half, then rince and dried.

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Then followeth the Gallig.

TAke one Pound and half of Sumach, four Ounces of Madder, an Ounce and half of Calcined Salt-peter, one Dram of Sal-armoniack, an Ounce and half of Vitriol, half an Ounce of Calcined Tartar: Divide these Drugs in two parts, and take two parts of Galls also, put in the Stuffs, take them out, avoid rincing the VVare and let it dry.

Then followeth the blackening.

Fill the Sumach Copper with the prepared Dye, twice or thrice, and for every time, add four Ounces of Vitriol, two Ounces of Sumach, one Ounce of Gum Arabick; and the last time superadd, half an Ounce of Gum Tragacanth, and a Dram of Mastick. I have also boiled the Stuff with Brown-wood, adding Six Ounces thereof to the first Suds, as also half an Ounce of Gum Albanum, and one Ounce of Calcined Tartar and Vitriol mixt together, and I found the Stuff of a beautiful black.

The Preparation of the Soot black Dye.

THis Dye is prepared and worked the same way with the last, only the Ingredients are different.

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The Drugs of this Dye are as followeth.

TAke sixteen Pounds of Alder-bark, twelve Pound of Soot, Oak-shavings or Saw-dust; ten Pound of Vitriol, two Pound of VVild Marjoram, six Pound of Brown-wood, one Pound and a half of Calcined Allom and Vitriol mixed together, four Pound of Filings, as much Lye as is necessary, and ten Pound of VValnut-shells, if you can have them: These must be all put in when the VVater is boiling hot, as in the former Dye, the Stuff being first of all prepared by boiling it an Hour and half with three quarters of a Pound of Tartar and one Pound of Vitriol, then rinsed and dried,

Then Galled as followeth, with four Ounces and a half of Galls, and an Ounce and a half of Calcined Salt-peter and Vitriol mixed with this Liqueur. It must be Galled once only, and then take care that it be not rinsed, but dried.

Then Dye it as followeth.

Fill the Kettle at two or three times, every time letting the Liqueur boil an hour, and add every time, three Ounces of Vitriol, four Ounces of Soot, one Ounce of Gumm Arabick, and the last time in particular, half an Ounce of Gumm Tragacanth, one Dram of Mastick and half a Pound of Salt. The Stuffs may be also blackned, with Brown-wood to please
the

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the Eye, but to either Dye, a good understanding Artist is necessary. The Brown-wood Dye is as followeth. Take eight Ounces of Brown-wood first boiled, half an Ounce of Gumm Albanum, one Ounce of Calcin'd Salt-peter and Vitriol mixt; and you have a good black.

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A

Perfect Discovery,
OF THE
ART
Of DYING.

Part III.
Of Dying Flax and Linnen.

How to whiten Green or Grey Flax.

MAke a Lye of good Ashes and unslaked Lime, and soak the Flax in it twenty four Hours, after which add Sal-armoniack put into the Middle of some unslaked Lime and a few warm Ashes, pour off the Water and make a sharp Lye, and if you boil your Flax in this Lye for an Hour or two, you will find it become very white and bright, and that your Sal-armoniack is fixed.

Note

Note that when the Flax hath been soaked in the Lye, boiled and well dried, then it must be rinsed very well in running or River Water, and blewed and wrung out with the Hands, and then dried again. *John Schonack* farther in forms us, that he knew a Person that used to prepare his Flax so well, and make it so fine and soft, that it was fit to be used in fine Camericks or Lawnes. The method he took was as follows: He made a very strong Lye, and soaked the Flax in it (how long the informer could not exactly tell) then he took it out and dried it, and afterwards rinsed it in fair or fresh Water, then he blewed and wrung it, and laid it in soak in Lye again; and as before rinsed it clean, blewed and wrung it, and after that laid it a third time to soak; in the Lye, rinsed it in fresh Water, then dried and Combed it, after all which it became as fine, soft and white as Lawn. But this is only proposed as an experiment worth the Tryal.

How to Dye Linnen, or Fustian of a Flesh Colour.

FOR every Pound of Ware take two Ounces of Bastard or Wild Saffron, put it in a bag, and dissolve it in the quantity of a Pail of Water one Night, throw away the Water, and take another Pail of Water, take the Saffron out of the bag, and rub it very well betwixt your Hands, wring it clean out of the Water, filter the Liquor that none of the Saffron be lost, and then

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then throw it away; repeat this Operation as oft as the Saffron leaves any Yellow Tincture in the Water, and when it is quite deprived of its Yellowness, then wring it out dry with your Hands: After which take a little Lye made of good Beech-ashes, heat it and put in your thus prepared Saffron, letting it soak five or six Hours, then wring it out, and that none may remain, filter the Lye through a hair Sieve; throw away the Saffron and add to the Lye an equal quantity of Beer Vinegar, stir it about very well, then put in your Pound of Ware, leave it in the Liquour three or four Hours, and then rince it clean out; and you will find it of a very good Crimson Flesh Colour: But observe the Ware must be frequently stirred about, to prevent its being flaked and unequally Dyed,

The manner of making a Fatt, and preparing hot Suds to Dye Linnen and Woolen blew.

First make a Fatt big enough to contain sixteen Pails of Water, wide at the top, and narrow at the bottom; season it with hot Water for twentyfour Hours, and then wash it out with cold Water, then cut a hole of a quadrilateral form about twenty-one Inches high, and fourteen broad; then prepare a Copper Plate of the same thickness with the Wood of the Fatt; which nail upon the hole, placing the Nails about two Fingers breadth from one another, taking care also that they be small, with
broad

broad heads, to prevent any leakage; then clap an Iron Hoop at the top, and another at the bottom of the Copper. The hole must be made about a Hand-breadth from the bottom of the Fatt. This done, Plaister or Brick it about, either leaving or making a hole in the Plaister or Brick-work, wider at the outmost end (and a little narrower at that which comes to the Copper) then the Copper it self; its shape being like an Ovens mouth, that the Wood be not injured when the fire to heat the Fatt of Suds, is put into this vacancy. Then for every Pound of

Indigo, in order to blew Linnen or Woollen, Take sixteen Pails of Water, into which put twelve good Hand-fuls of coarse Wheaten-bran, Half or three quarters of a Pound of Madder, and three Pound of Pot-ashes; pour them all into a Copper to make Suds: and when the Liquor boils so as to begin to swell, and bubble up, throw in half a Pail-full of cold Water, and take the fire from under the Copper: then take a Hand-ful or two of good Lime, prepared as the Tanners use it, and Plaister the inside of the empty Fat with it, then pour all the Ingredients out of the Kettle into it, and cover it very close. The Day before you do this, you must take care to dissolve your Indigo, in two or three quarts of Water, in a clean Iron or Brass Vessel, supperadding a Hand-ful of Wheaten-bran, a Ladle-full of Madder and one Ounce of Potashes; leaving it a whole Night by a Coal fire, but not suffering it to boil, or grow warmer than you can bear
your

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your Hand in it, but grinding it with a Pestle till it becomes as soft as Pap, and is quite cleared of all roughness or harshness, upon which it is fit to be put into the Fatt to the other ingredients. This done, stir it about three or four times with a Stick, then cover it close and let it settle for twelve Hours, after which, take off the Cover and put in a quarter of an Ounce of Quick-silver, stir it about and cover it as before, letting it settle for six Hours; then throw in a good Ladle-ful of Lime dust or Powder, or of the same as the Fatt was before Plastered withal, stir it about and cover it close, letting it stand three Hours longer; then put in an Ounce of Pot-ashes, stir it well about again, and clap a Coal fire in the hole before the Copper Plate, in order to keep it warm, letting it stand yet three Hours longer after which, nothing is to be added, only stir it as before, and in an Hour or two after, you may Dye with it as follows. Hang the ten Pieces of Ware in it keeping the Bran and flower, &c. from it with your Hand, to prevent its Touching the Linnen as much as possible; wring the ten Pieces out, one against another, then try by feeling with your Finger whether the Dye be harsh or soft and smooth, if it feels too rough throw in an Ounce of Pot-ashes, and if it be too smooth add a Ladle-full of Lime. When you have worked the Stuffs in it two Hours, put in ten fresh Pieces which Work as the former, and when they are dry, wring them a second or third time
in

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in the Dye, till they become of a Colour as deep as you desire them.

Work your Dye in this manner, till you have dyed fixty Pieces, after which, if you would Dye any Woollen Ware, Stockings, Worsted or Yarn: Take two or three Pails-ful of Water, into which put three Hand-fuls of Wheaten Bran, two Ounces of Madder, and half a Pound of Pot-ashes, hang it over the Fire and boil it to Suds, as before; then pour it into the Fatt, and after stirring it well about, let it settle for six Hours, after which stir it again, then let it stand to settle three Houres; try with your Finger whether it is harsh or smooth, if too harsh, add an Ounce of Pot-ashes; if too smooth, put to it a Ladle-ful of Lime; stirring it about again. When you design to Dye Woollen Ware alone, without Linnen, prepare a Liquor of a sufficient quantity of hot Water, one Hand-ful of Madder, and one or two Hand-fuls of Wheaten Bran, boil them together, and wet your Woollen or Silken Manufactures therein, and after letting them drop as long as they will, put them into the abovementioned Dye Fatt, keeping them there till they are become of as deep a Colour as you would have them. If you would dye your Goods Green, you must first dye them Yellow with Broom or Dyers Weed, otherwise called Yellow Weed; after which put them into the abovementioned Blew Fatt; but withal, observe that they ought not to be wetted in the Madder Water, as the Blew; but

but take them out of the Fat, as soon as they are sufficiently Dyed, always taking Care that you do not Dye above half a Dozen pair of Stockens, or a proportionate quantity of other Woollen Ware, before you put in your Linnen; which as soon as you have put in the Fat, ought to be covered close for half an Hour, then wring the Goods well about, let it settle half an Hour, wring it about, again and draw it out. Stir your Dye again, very well, adding Lime or Pot-ashes, according as it wants either, after which, let it settle for two Hours, then put in other Ware to Dye, and work it as before, stirring it every two Hours: If you find the Liquor doth not Dye or work well, let it rest a Day and Night, keeping the Fire to it all the while, and add one Ounce of Fœnugreek pulverized, and stir it well about, and the Dye will come to its self again. If you have so many things to Dye, that you have occasion to augment the quantity of Indigo to two or three Pound, yet you need not make your Madder, Pot-ash and Bran-Liquor stronger than what is above prescribed to one Pound.

To Dye Linnen Green.

Lay it a whole Night in strong Allom Water, dry it well, then take Broom or Dyers Weed, boil it the space of an Hour, after which, take it out and put into the Suds half or a whole Ounce of Verdigrease, according as you have more or less Ware to Dye;
H stir

stir it very well about with a Stick, then work the Linnen in it, once, twice or thrice, as Occasion requires, adding the second and third time a quantity of Pot-ashes equal to a Hens Egg, then work your Linnen the third time, and you will find it of a Yellow Colour; which dry in the Air, and afterwards throw it into the Blew Fat abovementioned, and that will produce your desired Green.

How to Dye Woollen, Silk, Worsted or Tarn, of a Flesh Colour.

PRepare two Pails-full of sharp Lye, from a Handful of Beech Ashes twice boiled; into one of the Pails, throw one Pound of Pot-ashes, and heat the Lye in a brass Kettle, and when the Pot-ashes are dissolved, stir the Liquor very well; stir up the Fire, and then put in one Pound of Flocks or Shreds of Madder Red dyed Cloath, hang it over the Fire, let it boil sometime, and stir it about with a Wooden Instrument; then fill it up with the remaining Lye made boiling hot, always taking care to keep it boiling and stirring, and a full hour after fill it up again with Lye, then scum it clear, and as it boils away for three Hours, fill it up with stale Urine: all which being carefully done, pass a Thread of Yarn through it, and Draw it through your Finger; to examine whether there is any Hair hangs to it, and if it doth, put in one quarter of an Ounce of Pulverized Turmerick, stir it about very well, and try with the Yarn Thread.

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Thread again, whether it takes as good a Red as you desire. If you would Dye your Ware of a Beautiful Orange Colour, then pour half your Dye into another Fat, and put into it your Ware, Dyed before Yellow with Broom or Dyers Yellow Weed; and in the remaining Part of the Dye, you may put your White Goods (which by the way must not be Allomed) covering it very close, that no Steem evaporate till it be cold: Then throw about two Pails-full of Spring Water into a Tub, and rince both your Colours very well therein, dry and Press them, and then rince them again in Spring Water. If you would have a very Beautiful Flesh Colour, hang your Kettle (which must be of Brass) again over the Fire, boil the Dye to Suds, and put in your Ware, leaving it there till it be cold, then rince it in the same Water which you have before, but remember to take especial Care, that you do not mix the Orange and Flesh Colours together.

If you would Produce a Lighter Orange Colour, hang the Dye again over the Fire, put in your Yellow Dyed Ware, and let it continue in till it becomes cold, then rince it as the Flesh Colour before.

If you would produce a Lighter Flesh Colour, then boil the Dye again to Suds, and throw in your White Ware as before, and rince it out; and so if you would Dye a Light Gold Colour, &c. do it as before, and

Take the Water, wherein you have rinned your former Ware, and boil or heat it; then put in the quantity of a Pigeons Egg.

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of Allom, after which put in your Ware, that is either Dyed Blew or Yellow, letting it continue therein till it be cold, and then rince it out.

If you have other Colours to Dye, you may follow the same Rule with discretion.

A Crimsou Dye for an Ounce of Tarn or Worsted.

TAKE of Roch Allom, Pulverized, one Ounce, of White Wine Tartar Pulverized, two Ounces, of Yellow Oaker Pulverized, four Ounces, of Litharge of Silver, two Ounces, and of Aquafortis, two Ounces and half; to all which add two Pails full of Water, and boil them together for an Hour and a quarter, then Wash them out with Fresh Water, and Scour the Kettle with Sand, then put them in again, and add to them two Ounces of White Wine Tartar, two Pails full of Water, two Ounces of White Arsenick, dissolved in a little Water, and two Ounces of Cochineal; first boil them together, then add one Ounce of Aquafortis, and so let them boil again till the Dye comes to its proper Colour.

To Dye Linnen Thread Blew.

FOR every fix Pound of Thread, take half an Ounce of Allom, five Ounces of Tartar, two quarts of sharp Lye, and as soon as it boils, put in your Thread and let it soak there

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therein four Hours, then rince or pass it through fresh Water :

And afterwards Dye it Blew;

With a Pound of boiled Brown-wood, three quarters of an Ounce of Verdigrease Pulverized, one Quart of sharp Lye, two Ox or Cowes Galls, half an Ounce of Calcined Tartar, half an Ounce of Calcined White Vitriol; put in the Thread at twice, so that you may Dye it light or deep at pleasure; and then the Thread having first lain two Hours in the Woad Lye, must be rince clean out. If it be put into this Dye, when it is cold, it becomes much brighter and blewer than when it is boiling hot; but the most lasting Dye for Thread is performed with Woad: But if you would Dye it in the Indigo Copper, you ought to use the same preparation Suds, as in this Dye, and the Colour will be durable; and lastly, the Thread Dyed with Indigo, ought to be rince through Warm Water, in order to give it the better Lustre.

To Dye Thread of a lasting Green.

Take three Quarters of a Pound of Alom, half a Pound of Tartar, two Quarts of sharp Lye, boil them together for an Hour, and soak your Thread therein three Hours, keeping it hot all the while.

Then Dye it Yellow ;

* in Latin *Chrysan-*
them and otherwise cal-
 led in English Golden
 Flowers or wild Mari-
 gold.

With eight Pound of
Broom, one Pound
 of * Corn Marigold
 Flowers, half a Pound of
 Crab-tree-bark, that looks Yellow and ripe;
 which put into the Kettle, and superadd
 two Quarts of sharp Lye, boil them half
 an Hour, then Dye the Thread in the Li-
 quor, as deep a Yellow as possible, but if
 * I suppose *Spanish* you can get any * *Spa-*
Broom. *nish* Yellow, an addition
 of three quarters of a Pound of it, will
 heighten the Dye, and render it more last-
 ing; for 'tis to be considered that all Yel-
 lows design'd to be Dyed Green, must be
 be as deep as Possible.

After which turn it Green with the Blew Dye,

AS in the last foregoing Receipt, so that you
 may turn it to a light or dark Green
 at pleasure. There are four Operations in Dy-
 ing a good Green, for first you may Blew
 the Thread with Woad, or else with Indigo,
 being first thrown into the Allom Suds, and
 afterwards in the Yellow, and you will have
 a lasting Green. So that Green is to be
 Dyed several ways.

How

How to Dye Thread another sort of Green.

Fill your Kettle with sharp Lye, then throw in a bundle of Broom, let them boil very well, then decant the Liquor into a Fatt, and for every Pound and half of Thread, take half an Ounce of Verdigrease, and half an Ounce of Allom, put them in a Quart of Lye, wherein Brown Brasil-wood hath been boiled, stir them together, and pour them into the Broom Water, then lay the Thread one Night in soak in this mixt Liquor, and you will find it well Dyed.

How to Dye Green Thread Black.

Take a Proper quantity of sharp Lye; into which put three quarters of a Pound of Brown Brasil-wood, boil them together, then pour the Liquor into a Fatt, and put into it one Ounce of Gum Arabick, one Ounce of Allom, one Ounce of Verdigrease, then put in the Green Thread, and leave it in it the space of one whole Night, and it will become Black.

How to Dye a Silver Dye.

TO Dye a pair of Stockens, take Six Galls, a like weight of Gum-Arabick, as also the same weight of Allom, with a small quantity of Brown Brasil-wood; boil them in Rain Water, then cool the Stockens out of the Liquor three times.

To Dye Thread of a Lasting Violet Colour.

Take half a Pound of Tartar, half a Pound of Allom, two Ounces of Brasil-wood, half an Ounce of Salt-peter, boil them together, then lay the Thread four Hours in the Liquor, after which rince it out and dry it. And

Then Brown it ;

With one Pound of Brown-wood, half a Pound of Brasil boiled in a large Vessel, which Dye is thus to be used : Divide it into four equal Parts, still Observing, that each Part must always be used Warm, and the Thread dried after each Operation, and when you use the first Part, add to it half an Ounce of Sumach, one Dram of Salt-peter ; the second time a quarter of an Ounce of Calcined Tartar, and one Dram of Pulverized Verdigrease ; the third time a quarter of an Ounce of Sumach, and one Dram of Salt-peter ; and the last time if the Thread remains a little Reddish, pour in a Quart of hot sharp Lye, and you will find it of a Beautiful Violet Brown : But if the Thread be boiled in Allom and Blewed with Woad, and then browned with Brasil, you will have a more Beautiful and lasting Colour.

To Dye Thread, a Purple Colour.

First Allom it with three Pound of Allom, half a Pound of Tartar, and two Ounces of Brasil, dry it, draw it through the Woad or Indigo Dye, then rince it clean and dry it again; then to brown or deepen it, take three quarters of a Pound of Brasil, first boiled; the Liquor whereof divide into three Parts, to be used at three times. To the first add half an Ounce of * *Paris-red*, one Dram of Mastick, * A sort of bastard Sandarac, a quarter of an Ounce of Calcined Tartar, always taking care to dry the Thread, after you have used any one of the Parts of the Liquor; the second time, add half an Ounce of Turmeric, two Drams of Cinnabar, and half an Ounce of Gum Arabick; the third time, when the Thread becomes Reddish, add a quart of sharp Lye, and by this means you will have your Thread Dyed, of a lasting Colour.

To Dye Thread Yellow.

TAke Eight Pound of Broom, one Pound of *Spanish* * Yel- * Broom. low, one Pound of Crab-tree rind, and one Pound of Corn Marigolds; put them into a Kettle with three Quarts of sharp Lye, and boil them together, and Work your Thread in the said Liquor three times Successively, not suffering it to dry between whiles, and you will

will have a beautiful and lasting Colour.

An Observation.

Concerning a Particular sort of Chermes, or Scarlate Berries, Peculiarly and Advantageously used in Poland, in deep Red Dyes.

IN the first Part of this Book of Dying, we have mentioned a sort of Chermes Berries, to be found in the Territories of the *Margrave of Brandenburg*: Which Assertion was grounded upon a certain Information, that the Author of the Observations had received about thirty Years past, importing that an Herb Woman at *Anspach*, commonly called the Flower Woman, used Yearly to gather a Quantity of Chermes Berries, and the Author is of Opinion, that these Berries are to be found upon several Plants, in divers Places of *Germany*, as well as in *Poland*; tho' they are not yet sufficiently known, nor can I any longer see any Reason to doubt, that those Berries gathered in the *Margravate of Brandenburg*, were the same which we intend to enlarge upon, which I hope may Contribute at least a Mite to the Publick Good.

To go the shortest way to Work; I am of Opinion that these Berries are nothing else, but those which the People, in *Roman Catholick Countries*, go out to gather on *St. John's Day*, and which they find upon a small sort of Plant or Grass (very well known to them) and called *St. John's Blood*, which they collect for a superstitious

ous end. This I take the Liberty to offer to the Inquisitive Naturalist to improve; tho' not without the Authority of several Learned Men, to back my Assertion; from whence we may Reasonably infer, that an advantageous Use may be made of them. *Camera-rius*, in his Epitomy of *Matthiolus*, mentions them, as doth also *Casp Baubinus* in his Notes upon the same Author, and in his *Pinax*, but *Dr. George Segre*, and *Dr. Martin Bernhard a Bernitz*, in the first and third Year of the *Acta, &c.* informs us more largely on this Subject, wherefore I have thought fit to offer what they say.

And first of all, there is nothing more remarkable, than that these little Berries if gathered when they come to be soft, tho' the Sunshine be so far from Hot, that it scarce affords a Warmth, and laid in the Air a Day or two, you find perfect Worms growing in them. Of the remaining Tincture, our first Author takes no Notice, but *Bernitz* Treats more at large on this Subject, of which take the following extract.

Polygonum, in *English* Knot-grass, is very well known to be of two sorts, viz. large and small, and there are different sorts of each, tho' they are not commonly applied to any particular Use. *Camerarius* mentions one sort of it, under the Name of *Polygonum Polonicum Cocciferum*, i. e. the Chermes Berry Knot Grass; and is followed by *Baubinus*, in the Description of the same Plant. These Berries are neither the Seed, nor Natural production of the Plant,
but

but rather a sort of accidental Appendage to the Root, for all Plants of the very same Identical Species do not produce them, they being only found, hanging to some of the Roots; and the Production of these Berries, seems indeed to depend upon the Soil, the time of the Year, and the benignity of the Season; because for want of these, 'tis Observable, that every Year doth not Yeild them. They are of a Blood or deep Red Colour, in size not unlike Hemp-seed, but perfectly Globular; they contain a Blood Coloured Juice, and a Worm of the same Colour; which sort of Worms *Hermolaus* upon *Dioscorides*, Affirms Tinctured Silks of an Uparallel'd Beautiful Red, Scarlate or Purple; and that their Tinctural Virtue, was at first accidentally discovered, by Observing that the Hens which Eat of them, always voided very high Coloured excrements. 'Tis worth inserting what our Learned Author saith, of the Word *Carmasin* i. e. Crimson; that it seems a corruption of *Carbasin*, which is likewise esteemed the principal Silk Dye; but what seems to invalidate this derivation, is, that the Name of Chermes, rather appears to be given to these Berries by the *Arabians*, than the *Greeks*, since he informs us, that in the *Phanician* Tongue, the Worm was called Chermes. It is not reasonable to imagine, that the *Arabians* were ignorant of the Nature of the Berries, when they gave them the durable Name of Chermes, by which they are at present called; for that the same thing is at present called by the same Name, or
to

to speak more clearly, that it is become its most lasting and universal Name, is notoriously evident.

The Common People in *Germany* call them *St. John's Blood*, because they appear at the Summer Solstice, which always happens not long before or after *St John's-day*. The name of *Polish Purple Berries*, was undoubtedly occasion'd from their being found in greater plenty in that Country than in others, and their peculiar and advantageous Use of them in Dying, to which end they seem first, and more particularly to be used, by the Eastern Countries, adjacent to *Poland*.

Bernitz particularly observeth, That they are found in greatest abundance about *Warsaw*, and more especially in the very Field, where the Coronation of their King is commonly Celebrated; that they grow in sandy Ground, and in great plenty in *Ukrania*, and peculiarly in the largest and most sandy Deserts; that the Crown General *Konitz Poltzky*, and others of the *Polish Nobility*, whose Seignories lay in such Lands, used to sell them to the *Jews*; who always gathered them at the proper Season, and made their Market of them. These Berries are generally gathered by poor People, appointed thereto in the following manner. They hold up the little plant with the one Hand, and with the other, by the assistance of a Hollow Trowel, made for that purpose, they pull up the root whole, and undamaged, from which they first separate the sandy

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dy Earth, and then gather the Berries; and as soon as that is done, clap the root into the Ground again immediately, which is certainly a very prudent and advantageous way, for no doubt but it remains prolifick, or at least sheds its seeds, and produceth another in the place. When the Worms contained in these Berries come to maturity, they eat their way through, and leave their Berries, in effect, nothing but clear empty Husks. The People appointed for this Work, select the largest sort of these Worms as they slowly march out of their Husks, and very carefully dry them, and leisurely make them into balls, which is much better than the lesser sort, and affords twice as much Colour and is therefore sold considerably dearer. Our Author further affirms; That this Drug is chiefly sold to the *Armenian* and *Turkish* Merchants, those Nations Dying their Woollen and Silken Manufactures therewith, as also their Leather, but especially that sort called *Saphian*: With it they also dye their Hair Work, and Flockt Tapestries, of a Beautiful Red, as they do likewise their Horse-tails. This Author also observes, That the *Hollanders* buy great quantities of this commodity, at a great rate, at *Dantzick*, which is a considerable Market for it; and withal, that the *Dutch* are wont to mix an equal quantity of it with their *Cochineal* before they use it, which not only heightens the Dye, and renders it more agreeable; but makes it take better upon the Ware; *Cochineal* of its self being too greasy.

When

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When the Berries are gathered, they moisten them with Vinegar, or very fresh cold Well Water, in order to kill the Worms; when that is done, they immediately dry them, either in a moderate Stove, or Oven, or in a hot Sun, taking care withal, that they be not too dry, which those employed in this Work are very skilful to discern.

Our Author also tells us, not only that the *Russian* Painters, prepared a very Beautiful Red or Purple Colour with this Ingredient, and Vinegar or Limon Juice, but that the beautiful Red Lake is prepared from it. And what is most remarkable, he asserts it for a certainty; that the Colour so much at present in esteem, and which is sold at so dear a rate, called *Carmin*, is prepared by the *Jews* and *Armenians* in *Persia*, from this very Drug, which they import there from Foreign Countries; that a great part of the Preparation, agrees with the Magistery of *Chermes Berries* described by *Zwelfer*: He also affirms, that as well the so well known *Spanish* Wool, as the Cosmetick which comes from *Turky*, called *Pezzette di Levante*, is a mixture of this ingredient and Limon Juice, and particularly of this Red Juice prepared from the dried Berries. What he saith concerning the Medicinal Virtue of these Berries, that it is the same with the other, seems reasonable enough; but what he talks of the diversity consisting more in the diversity of the signature and Colour and than the Nature, I shall at present omit.

'Tis

'Tis not to be doubted that as this plant grows more peculiarly in dry sandy Deserts, and unprofitable Lands, so we may hope for a better improvement of it than hath hitherto been; and that it may be one Day set on Foot, as well as several other necessary things, in order to help our poor Country; or at least prevent the Exportation of so much Money for Foreign Commodities, which in time may be kept at home, an Instance of which we have, in the improving Ofiers and Woods, that was at first derided, and indeed so it will be as long as any body is left to speak against a good design.

A
 Perfect Description,
 O F
 Pot and Woad-Ashes,
 T H E I R

Goodness, Duration and Preservation,
 with several Proofs and Instructions
 how to chuse the best Sorts.

Written for the Information of the Lovers
 of the Noble A R T of D Y I N G.

A Direction.

How to judge aright of Pot and Weed-ashes

First of all the Dryest and Heaviest
 are the best; and that the Reader
 may be thoroughly enabled to di-
 stinguish aright on this subject,
 wherein consists the dryness and weight
 of the Ashes, we shall distinctly explain,
 1. the Dryness. 2. the Weight, 3. the
 Moistness, 4. the Aired, 5. the Drowned,
 and 6. the twice dried Ashes.

As for the weight we must particularly ob-
 serve, what sort of Tubs or Fatts they are in,
 I from

from whence a judgement is to be made of it, *viz.* the Width, the Length, the Thinness of the Wood, and the number of Staves with which the Barrels are made.

The Height and Width may be measured with a Leather Girdle, and the exact Mensuration of the Barrel will enable you to make a judgement of the Goodness of the Ashes therein contained. But most especial regard must be had to the Width, because 'tis of greatest importance, an Inch in the Width, containing more Ashes than a Handbreadth in the Height: For Instance take two Fatts, set them next each other and fill them full of Ashes, after which empty them keeping the Ashes by themselves, take them both to Pieces and of the Planks make one Fatt, and it will be found to hold four of the other Fatts: And tho' this seems Improbable to such as are Ignorant of the Mathematicks, yet those acquainted with that Science know it is Demonstrable.

For Example; take a round or square Vessel of Fifteen Inches, and Multiply it by its self *viz.* Fifteen, and the Product will be two Hundred Twenty five Inches: But take a Barrel of Twenty one Inches Wide, and Multiply it by it self, and you will find the Product four Hundred Forty one Inches, which is very near double: As this Reason holds good in a Square, in proportion to its Diameter, so in proportion it doth in the Circumference of a Barrel: And as we have before Observed, the Thinness or Thickness of the Staves whereof the Vessel is made,

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made, occasions a very great Alteration in the quantity of Ashes, as you may Observe when a thin Barrel is empty, that it is much Wider than a thick one of the same size, and Consequently will hold a Larger quantity of Ashes, than you could Believe before you try the Difference, and consequently the Weight is increased, as it hath sometimes happened, near a Third part.

I have before hinted somewhat concerning the Number of Staves. I need not say much more concerning that, since, 'tis evident that a Barrel must be Larger or less in Circumference, according as it is composed of Six, Eight, Ten or Twelve Staves. So having said enough of the Barrels, come we now to speak of the Ashes therein contain'd, their Nature and Substance, herein following the Judgment of the most Skilful only.

What sort of Ashes are best and Strongest.

Those Ashes are esteemed best, which when you thrust your Knife into the Chincks of the Barrel, are found of a Stony or hard Substance, so that if you try them by striking the Back of a Knife hard against them, it Sounds as if it were struck against the Stones in the Street: When upon opening the Barrel the Ashes are found hard, and sticking together in Lumps like Sea Cole, or come out in the shape of the Barrel, whole, well stuck together and as if they were pressed together, or

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come out in great Knobs, which the larger they are the better the Ashes. Thus much for the Hardness. As for the soft Ashes we ought chiefly in our choice to take care of the Dryness, weight and thickness of the Barrels, that they be fast Packed and Stick together in knobs, as we shall shew more at large, when we come to talk of the Soap-boilers Ashes.

Of the Colour of the best Ashes.

THe Colour of the best Ashes is always a fine blew or Sky Colour. The manner of examining the Colour is as follows, *viz.* by throwing a piece of very fine white Cloth or Crape, over the Ashes, and if the Ashes appear of a Beautiful blew through the thin Cloth, and the whiteness of the Cloth plainly appears as spread over the Ashes, 'tis a Satisfactory proof that you have the best and finest Ashes. This sort is used in the Linnen Manufacture in *Brabant* and by the thread Bleachers, and is generally the scarcest sort, and bears the highest price, which indeed, I am apt to think, it would alwayes do if it came in as great plenty as the other, because of its beautiful Colour, and that it is endowed with all the Virtues of the other sorts, and besides is not only fit to give a Lustre to Linnen and other Manufactures, but may also be used advantageously to all other uses.

Of

*Of the Bleachers Ashes of Holland and other
Watry Lands.*

THE Distinction betwixt these and the former Ashes, is more customary than profitable; The *Dutch* Bleachers buying one instead of the other, and preferring the latter to the former: but tho' the latter are sometimes in thinner Barrels, and more glutinous than the former, yet in weight and strength, they can by no means be compared with them.

Of Scouring Ashes.

THERE are several sorts of these slight Ashes, but none of them are so much like the best sort, in any thing as Colour, which is a Grey, deep Blew, and if they were alike in Virtue, Weight, Barrels and Packing, yet there would remain this difference, that this sort alone is Grey, and of a deep Blew, and as the best Sky Colour'd Ashes are covered with a sort of Whiteish Colour, so these deep Blew Ashes, on the outside, appear of a sort of agreeable Grey Colour; but if you find, the great Clots upon breaking are chiefly Blew, assure your self, that they are very good for the sort. These Ashes cannot be used in Whitening, because as they are very foul, they consequently produce a Lye as foul, wherefore they are generally made use of in Scouring; as they might be very properly and advantageously in Soap-boiling, if the price were not higher than the Ashes
13 they

they generally use, which are called Kettle-Goods.

Of Soap-boilers Ashes, or Kettle-Goods, as they are sometimes called.

WHICH require a great deal of skill, in the choice of them, because there are several sorts of them, very different in goodness from each other; so that our whole Book would not be large enough, to Treat this Subject perfectly, and particularly. Good hard Soap-Ashes, are distinguished as the other, by the Height and Width of the Barrels, by their Weight, Packing, and Hardness to be discovered betwixt the Pipe-staves and at each end, the weight and largeness of the clotts, and their sticking together after they are pounded with Staves, or as Iron Mineral when they are beaten together and packed very hard to the bottom of the Barrel; always considering that by how much the larger the peices or clotts are, they are by so much the better for the Soap-boiler. In short they differ from the other two sorts in the price, being the cheapest sort of the three, by reason that the Beautiful Coloured Ashes, endewed with all the good qualities abovementioned, and used in Bleaching, are also proper for Scouring, and Soap-boiling, as the second is proper for the two uses of Scouring and Soap-boiling, whereas the last is fit to be used in Soap-boiling only; so that as the first is fit for all the three mentioned uses, the second for two
of

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of them, and the third but for one, 'tis but reasonable that they should be dearer in Proportion, if equal Quantities were with equal ease to be had of each sort. There is no great difference in the strength of the three sorts, tho' there be in the Colour. As the good Scouring Ashes are as before said of a deep Blew, so this last sort being broken to Pieces by an Ash-Iron, if it appears mostly Grey tho' not without some Mixrure of Blew, and the Pieces as hard and pointed as so many small Pieces of broken Glas, you may conclude them to be very good Soap-Ashes, and tho' not Proper to Scour, yet they are often found as strong, large and good, nay sometimes larger than the second sort.

Of New Ashes.

WHICH are a sort of Ashes, that require so nice a Judgment in the Choice of them, that the Oldest and most experienced Merchant is often at a loss; for they come frequently from the East Country, out of the Woods before they have had their proper maturing time, and are almost like unslaked Lime, and of a Mealy sort of substance, so that at best 'tis hard to determine concerning their Nature. However in order to form as good a Judgment as is possible, 'tis in the first Place Necessary, that we have an especial regard to their Weightiness; to which purpose, poise a Hand-ful of them in your Hand, and if you find them weighty, 'tis a very good Sign. Secondly Fill a
I 4 Barrel

Barrel with them, and afterwards pour them out of the Barrel, Perpendicularly, and if they fall very Swiftly to the Ground, 'tis no bad Sign. Thirdly, As 'tis also a very good one, when they are very clean and White as Hail. Fourthly, 'Tis another good Sign, when the Ashes run or cling together, and begin to be full of Grains or Kernels, at each end of the Barrel. Fifthly, If when you try them, by sticking a Knife into these Mealy Ashes, you find some Clots of them, (the larger and harder the better) of as hard a Substance as Sea-cole. But if you have time enough to spare, to search more Narrowly into the Goodness of these soft Ashes, select out of a Barrel of this sort of Goods, the largest Clot or Piece, that you can find, which you may observe to be rather like Stone, than a Clod of Ashes, and is what oftendecives the unwary and unexperienced Soap-boiler, and causes him to complain of his Ashes, as if he were Cheated. But for farther information, lay this Clot in the Air a few Dayes, and it will separate and become a Mealy soft sort of Ashes, like the rest from whence you took it; then take it in, Work and pack it as you intend it shall remain, in the same manner as hard and soft Ashes use to be Packed, and by degrees it will become soft, then Part of it will grow hard, and some will be found of a midling sort betwixt both, and a Third soft as Meal; of which last sort, take one Pound and half, moisten it and let it stand several Hours, and if it becomes

as if it were hard Baken together, 'tis good, and the harder the better: But if on the Contrary it grows softer, and is streaked or mixed with a Yellow reddish Colour, and you find that it doth not Cement or grow together into hard Clotts or Lumps, but Still remains of a Mealy Substance, you may conclude that 'tis of the very worst sort of all, that it is not New, but hath long been Burnt, and is worth very little or at most but about half the Price of the other sort.

What follows is worth your Observation and Care.

THE New Ashes require a very diligent care in examining them, because we may therein easily be mistaken by Judging them Newer or Staler than they really are; to prevent which as much as is possible, their Age may partly be known by the marks of the Woods, from whence they come yearly; by the Colour of the Ashes, and by observing whether the Heads and Bottoms of the Barrels be covered on the inside with Ashes, or rather with the corruption or putrefaction thereof, which always sticks to the Bottoms, sides, and joints of the Barrels, if the Ashes are old. The age of the staves whereof the Barrels are made, and the Hoops, may afford also some light: But the best way is to search through the whole Barrel, and if you find them soft in the middle, accompanied with the abovementioned hard undigested Lumps

Lumps or Clots, then you may certainly conclude, that the Ashes are New. The New Ashes, are often sprinkled with Water, and by the assistance of moistning the top of the Barrel is heated, which sprinkling together with the help of the Air, (which contributes very much) kills the uppermost Ashes if they are even Packed, tho' the innermost remain very good New Ashes; and this Imprudent carelessness often presents the Buyer with an Advantageous Bargain, the Ashes not looking so Sightly as is hinted above. But enough on our first Head, till we come to speak in General concerning the diminishing the Clots. In the mean time you ought to remember carefully that when New Ashes comes in, you may make Lye cheapest, as Experience hath always shewn; for the soft Ashes that are clotted will yeild more Lye, than the hard, for which Reason the soft is cheap and best Hushandry, and the hard Dear.

The hard sort of Ashes is not so apt to decay and loose its strength with the length of time as the soft, which decays apace, wherefore 'tis always sold cheaper, and the newer it is to be sure the stronger it is, and in the boiling emits its Saline Virtue very swiftly; but on the contrary the hard Ashes, tho' New, do not loose so much of their strength by keeping a long time as the other, tho' they decay more in two or three Years, than in one. But the fine Sky Colour'd Ashes before mentioned, in dry and fine Weather, being kept

kept a Year or a Year and half, often prove as good, and the Colour as bright, as at first, nay sometimes they are better for Bleaching and Thread dressing and such like sorts of uses. But as to the hard and soft sort of Soap-Ashes, which we chiefly designed to treat of here, the demand for them depends very much on the dearness or cheapness of Hemp or Rape Oyl, and the dearness or abundant Plenty of Pot-ashes, as we shall more largely hereafter make appear.

Of Wett Ashes.

THe Wetness of Ashes is owing to the Misfortune of their being Transported in Leaky Boats upon the Rivers, near whence they come. The wett they Catch by the Barrels their being thrown too hard to the Ground, or too roughly Handled, which consequently makes them Leaky; for when the Water comes to your Ashes, the wetting damages them very much, which may also happen from the Ill hooping of the Casks, the distance of the Staves, or hardness of the Clods, which may make way for the entrance of Water, which Imbibes the best lixivial Salt and leaves the Ashes very feeble, especially if they continue long in the Water; and 'tis Observable that the harder the Ashes are, the more damage they always receive from the wett. These wett Ashes keep their Colour very well a good while, especially if they are kept in
moist

moist Places, and also the Barrels close shut. But as soon as they are exposed to the Air, or the Sun doth but Shine upon them, the Colour Dyes, and from Blew turns Pale, like Bricklayers Morter. But to try the Goodness of them, after taking off the Head of the Barrel, dig up some of the Ashes pretty deep, and tast them, keeping them upon your Tounge, as long as you find them contain any sharp biting Quality, and if you find that lasts for a Considerable time, then the Ashes are good; but if it quickly Vanishes, they are not worth much.

In the same manner you may try the Clots of the remainder either in the middle or bottom, by holding them to your Tounge, to tast, by which you may Judge of it as is before directed; And if you can split the bottom of the Barrel in two Peices, and where the Wood is split, examine carefully, if the Lye of the Ashes have Corroded deep into the Wood, and Whether the Colour of the Plank be Brown-red, if you find it so, and that the Ashes have penetrated deep into it, 'tis a very good Sign and it hath a good deal of Pot-ash in it, but if you find it contrary you may be sure 'tis not good. This sort of drowned Ashes may also be known by other Marks, for when the Barrels are Sunk to the Bottom, the way of Fishing them up is always with Leavers or Poles with sharp Iron points, made on Purpose for that use, and often before they can hit aright, to bring them

them up, it happens that they Strike them several times into the Barrels between the Staves, &c. Which gives a fair Opportunity, of Examining the Goodness of the Ashes by the above mentioned and other ways of Tryal; but if it have lost its biting quality, 'tis of no Value.

There are also other accidents, which damage and moisten Ashes, *viz.* The Watryness of the Wood where they were burnt; occasioned either by much Rain, Hail, Snow; or in the Transportation from the places where they are burnt. Whether the Ashes at the bottom of the Barrel be damaged, may easily be known by the Water that stands about it, which will be foul if it be so, and so far as the Tub stands under may easily be discerned by the moisture of the Pipe-staves and Bottom, for the uppermost part where the Water hath not come you will find dry: 'Tis a certain rule also that those Ashes, which have been wetted or drown'd in Running Waters, are by no means so strong as those which have been wetted in Ships, or Boats, the reason whereof is plainly that flowing Waters wash away the strength of the Ashes, whereas the strength of the dissolved Ashes remains yet amongst the other. And farther; when the Ashes are fished out of the Water, and the Fatts sett upon one another, so that the Lye drops off them upon the Earth, you will find the undermost the wettest and brown on the out side, as long as they are kept from Air Wind and Sun, but if they are exposed those Barrels which have been wetted become

come outwardly White mixt with a Reddish and Pale Colour.

Also in some Woods where the good dry Ashes become like the last mentioned, by being prepared upon their fowl Earth, tho' these are really the best sort of all, and much better than the forementioned wet Ashes: This sort of Ashes frequently remains a year or longer in the Woods, for want of Frosty Weather, good roads or Snow, without which they cannot be brought to the Shipping Places; and in the Spring and Harvest they often want Water, and their Rivulets become Innavigable, in the Place where they are made, so that they are forced to let their Ashes lye a whole Year in the open Air, exposed to the Injuries of Snow, Rain and Wind, and consequently 'tis not to be wondered, that there happens some Damaged wet Ashes amongst them. These if the Earth be good are a thoroughly Profitable sort of Bracks or Ashes, and appear of several sorts, some hard some soft &c. Each according to its kind and the Nature of the Earth, which is often better than some of the forementioned: And when these are brought together, they are not much esteemed, and therefore are Sold at low Rates, tho' they almost always prove better, than was expected.

Of Damaged or Wet soft Ashes.

ALl soft and weak Ashes, if they come to be wet, have this Advantage over the
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the wet hard Ashes, that they are not so soon wet through, and that when Washed through with Water, they do not so quickly lose all their strength as the hard; for being of a Mealy Nature, their strength is not so soon rinsed away as the harder sort, which when it hath Lain long in Water, very often is utterly Deprived of all its Virtue, as we have before hinted, and may easily be tried.

Of Damaged or Wet Ashes, Wetted in Fresh or in Salt Water.

TIs Undeniably certain that all wetted Ashes (supposing them alike in Goodness) that have been Damaged by fresh Water, are much better than those which are injured by salt Water; Because the salt Water is very injurious to, and unfit for Lye, and those so Damaged are utterly unfit for Soap-making; the truth of which plainly appears by Experience, for after great Charge and Trouble, they always make bad Soap, to the Great loss of Soap-boilers, wherefore these Ashes are as much as is Possible to be always avoided.

Of the several Sorts of Ashes which come from several Places.

Several sorts of Ashes, come from *Poland* to *Dantzick*, which are marked with Crowns, that mark being set on by a sworn Officer thereto appointed in the following manner.

manner. The Ashes being Unladen out of the Ships upon the Ash-wharfe; the Barrels are laid in one two three or four Rows, over against each other, at such a Distance as the Officer may easily go betwixt the Rows, which he doth as follows. He carrys with him a long Large Knife, and a Cooper's Adds, with the latter he holds down the Staves of the Belly of the Barrels, in order to get his Knife in at the Chinks or Joints, to see whether the Ashes be clean or no, and after stirring his Knife about, if he finds the Goods to be clean and white, he orders the Workmen to mark the Fatt with the Crown and the Arms of the City, which they burn in it; It is not his business in the least to take care, whether they are soft or hard: But if they're fowl and not white enough, then he Marks them by striking his Adds twice a cross the uppermost Stave of the Barrel, that is Exactly in the middle: And this sort is Generally $\frac{1}{10}$ less in Value, than the Crown'd, and at *Amsterdam* is sold from two *Flemish* Dollars to three *per* Last less than the Crowned; 'tis called Brack, and if it be yet flighter, 'tis called Bracks-Brack, that is flight or simple Brack, being marked with deep cutt Notches in the Hoops, without any Burnt mark. This flighter sort is commonly called Wood Bracks, they coming from the same Earth, and being part of the same sort of Ashes with the other, but are not here distinguished for being wet; and these are also 10 fl. Cheaper in proportion.

Of

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Of Konigsberg Ashes.

THE Ashes brought to *Konigsberg* from *Poland*, *Lithuania*, and *Russia*; are brackt or markt as at *Dantzick*, only with a different mark. The best is markt with a Bears claw burnt on the Barrel, and where you find it wanting you may conclude, it is Brack, which is called Hoorn at *Amsterdam*, and the rebate of the price is four *Florins* *Polish* money, and at *Amsterdam*, six *Florins* per Last; and that which does not come up to the sort called Hoorn is Bracks Brack and is marked as at *Dantzick*, with this difference that the rebate at *Konigsberg* is 8 and at *Amsterdam* 12 *Florins*.

Of Riga Ashes.

AShes are also brought from *Russia*, *Courland*, and other Places to *Riga*, and are there Bracked and marked, as beforementioned; but there is a Difference in the Hoops, which are called Spieged-boll: And the other sort commonly called Beeren Klaw, or Bears Claw, marked with a burnt mark of a Hand and Star, is sold at *Riga* for four Dollars the Last, at *Amsterdam* for nine Guilders less than the Spiegel-boll; if it will not come up to Spiegel-boll, 'tis called Brack and the Barrels are marked with a deep Notch Exactly in the middle; And the Rich or best Brack, which is mixed with the Spiegel-boll, has a Star
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burnt on one end. At *Riga* one Barrel of Boll, is worth two of Brack, and at *Amsterdam*, you may have three of Brack for two of Spiegel.

A Discourse of Pot-ashes.

POt-ashe is come so Generally into use, that if the Lye necessary to a Tunn of Soap differs, only Ten or Twelve, from that of Waydashe, the Soap-boilers use Pot-ashes in its stead, which renders some skill in that as necessary as in Waydash or Willowash. First we must look after the Purity of the Colour, that it be Blew without any mixture of Green or Earth, Salt or Stone, like Pot-ashes, or any other Ashes, or that any fine blew Weydashe be amongst it, all which you must have an especial regard to in your choice; for some Pot-Ashes, which comes from *Riga*, is neither half so good, nor worth half so much as the best, which comes from *Konigsberg*, or *Dantzick*. Those who judge of Pot-Ashes by their burning; and the large quantity of Lye, that drops, whether thick foul, or clear, as soon as ever the matter turns to Ashes, ought rather to conclude, concerning the quantity or weight of the Ashes; than to infer that they are strong and good: besides there is a sort of Pot-ashes which when it is new or at first coming, you find as well coloured as the best, if you attempt to use it then; but if kept a while or is old, it grows weak; and the longer it is kept the feebler it becomes; for the great clots dif-

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dissolve and break and it turns like the unsettled or unclotted Waydashe when exposed to the Air, or crumbles like a Medlar; so that we should first consider whether it be the best sort.

From *Konigsberg* comes frequently, very indifferent Pot-ashes, which is yet better than that of *Riga*, and often better than the *Dantzick*. Tho' I question not but in every Place, the Burners diligently aim at the best. From *Dantzick* there comes a sort of good Ashes, as well as from *Koningsberg*, which are a sort of *Riga* Ashes.

But to pursue my first Design, to instruct my Reader, how to know the best Pot-ashes. Then as far as the bare Eye will lead him, he ought to see that they be first of a Beautiful Colour, and Blew. Secondly that they be Clotted together in Large Pieces, streaked with White throughout, as the Blew Whet-stone is with a Whitish Grey. Thirdly, that as soon as they begin to be touched with the Lye, They become Immediately Glutinous, and when you find them Glutinous, they are also greasy and slippery. These are three very Good Signs.

To try the difference in the Goodness of Pot-ashes yet farther, and that we may be able to distinguish betwixt Good and better. Take out of every Barrel, you design to prove, an equal quantity. viz, a Pound or more; and put each Pattern into a Pot apart, pour upon each an equal quantity of Water, set them in a Proper Place, and let them stand Ten, Fifteen,

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Twenty, or Twenty four Hours, stirring them very well till all be dissolved, then Examine which Pot hath the clearest Lye, and which is best Dissolved, and that which you find so is certainly the best at this time; tho' the other may come to be good in time; and then which is of the best Colour when dissolved is best. And by this rule you may also examine, which is the second best, and which is the worst; also when the Lye is clear and thoroughly dissolved you may find Earth, Sand or other dross or sediment at the Bottom; wherefore take a piece of *Dutch Soap*, of the bigness of a Walnut; and put into one of the potts to the Lye, and if it swims at the top, add just so much Water as will cause the piece of Soap to sink to the Bottom, then immediately take out the piece of Soap and put it into one of the other pots of Lye, and if it swims pour in Water as before till it sinks and so on from one Pot to another; and that Pot that receives the most Water before the Soap sinks, you may firmly conclude to contain the firmest and best Ashes, and you may judge of the rest in proportion to the quantity of Water you find in them. But notwithstanding all this care you will find sometimes a sort of Ashes, which produces a thick Lye, and presently turns to a slimy mothy substance, and will float the Soap and take as much Water as the best sort of all.

Tho' this is asserted by some, yet according to my opinion it is hardly possible.
The

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The clear and well dissolved Lye, differs very much in value, from that which will not dissolve, and remains hard and stiff; and tho' not only the Soapboilers beat it and use it in Soap-boiling, without any inconvenience, but the Whistlers, Thread-dressers, Glass-makers, and others sometimes follow their Example, yet the clear and well dissolved is the strongest best and most certain, and the thick is indeed only fit for Soap-boilers.

'Twill not be amiss to add directions how to make an exact Calculation of the strength and goodness of the Ashes by the quantity of Water; as for instance, Having put in each Pot one Pound of Pot-Ashes, and, to try, a quart of Water, but upon examination you find that the first pot will bear before the Soap sink fifteen sixteenths of a quart more (more or less as it happens) the second will bear twelve sixteenths more, the third ten, and the fourth eight, and so on; then state the question as follows *viz.* if one Pound holding Thirty one sixteens of Water, cost three pence, what ought to be paid for Twenty one Sixteens, Twenty six Sixteens, or Twenty four Sixteen in Proportion; and work it according to the Arithmetical Rule. You may also take another way by the quantity of Lye, stating the question thus, If Fifteen Sixteens of a Quart of Lye, cost three pence, what will Twelve Sixteenths of a Quart? and so on in Proportion. The same Method may also be taken with the Sand, Earth,

stone, dross and whatever is found undissolved in the Lye; as for Example, If in one pot containing one Pound weight of Ashes, I find not melted, and that is not Pot-Ash, the quantity of an Ounce when dried or one 16th; therefore in the Hundred Weight there must be in proportion Six Pound and a quarter of the same dross, and consequently the Ashes are so much less worth: And you may take the same Measures, in computing all the defects and faults, tho' they are not here Particularized. Tho' at present these sorts of Goods grow yearly better, as those marked A. B. C that seem'd to appear rather fryed in a Pan than Burnt, and yet were very little faulty: Sometimes you have these of one Stiver and sometimes of three Stivers, and it happens to differ more one Year than another; so *Anno. 1690.* most Ashes lookt only as if they had been fryed in a Pan, but yet were of an extraordinary Beautiful Colour, mostly Grey, and the Ashes proved very well: 'Twould be too tedious to Particularize any more on this Subject; which is at present come to such a perfection that every Ash-Burner of a Wood, sets his particular mark upon his Barrels as *Fisch's* is A. T. X.

A Short

APPENDIX

INFORMING

What Pot and Waydashes are;
And How Made.

THese Ashes being not only used in all Dye-Houses, but also found necessary in almost every particular Dye, it cannot therefore be Labour lost, to describe the Nature of them, and to inform how they are made. We have before in the Universal Instruction for Dying, being the first Part of this Book, hinted what these Ashes are, and how prepared; but, upon Consideration, that that Subject, seem'd to be a little too briefly Handled there, we shall here Treat it more at large.

To make Pot-ashes, they take clean Wood-ashes, particularly those of hard Woods and (for the greater certainty) glowing hot, that they may the better extract their fatness: These they Dissolve in boiling hot Water, which Operation produces a very sharp Lye; which if they have 4 Kettle full or more they prepare as follows; First they fill one half full (always

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taking care that the Kettles are Iron, not Copper, or a little more, and above the Kettle they place a Fatt filled with the mentioned Lye, towards the bottom whereof they clap in a little Tap. They make a very good Fire under the Kettle, in order to Dry up the Watery Part of the Lye; which as soon as it begins to boil away pretty fast, they set the Tap in the Lye Fatt, a running into the Kettle, the Stream being about the bigness of a Straw, to supply that Part which Evaporates. Then Stirring it about Diligently, they boil the Lye by degrees till it boils Thick, when it begins to make a Noise like Stroaks in the Air, Occasion'd by the Thick Salt which the Lye Yeilds, and is settled to the bottom; After which they diligently stir it continually, and by keeping it hot evaporate all it's Moisture, till it becomes a Brownish, sharp, thick, warm, stony Substance, and then 'tis dug or broken out of the Kettle, and clapped upon bright burning Coals, till it becomes White, Gray or Blewish. This is the preparation of what is called Pot ashes, and is performed Chiefly at *Doru* and *Tautenburg* not far from *Jeno*.

Wayd-ashes are prepared in the same manner, from the Ashes of burnt Wayd, that is Willow. The French frequently instead of these Wayd or Willow Ashes, use Wine-dross or Lee-Ashes, particularly the thick Lees which the Brandy Distiller, after having extracted all its Spirit and moisture, leaves

leaves as a *Caput Mortuum* behind: This they dry and burn, and by making Lye of it, boiling and preparing as above recited in the Case of Pot-ashes, extract its Saline Substance; and this they call *Cendres Gravelles*, or *Potasse*, or *Cendres cuites*. In France they use Calcined Tartar sometimes, which they Calcine to white sharp Ashes in an open Vessel upon the Fire.

'Tis notwithstanding undoubtedly certain that there is no real difference in all these Lixivial Salts, in their Vertue and Operation, but one is really as good as the other, tho' they differ very much in the Price, a Pound of Tartar costing more than forty Pound of Oak or Birch. However in the Preparation of all these Lye Salts, care must be taken that it be well performed.

Those Ashes are always best, that don't run to Water, or Dissolve in the Celler for if they do that, they have been falsified with Rock Salt, or Salt-peter, which last happens, when the Ashes have stood a long time before boiling out of the Lye, and contracted some Moisture from the Air; after the Boiling then they incline towards the Nature of Salt-peter, which Spoils their Operation.

Which is that they Heighten, and Subtilize Dyes or Colours to a great degree, an Instance of which you may observe, by taking a Glass full of thin Brasil Suds or infusion, into which if you put a little Pot-ash Lye, it turns it from a bright Purple to a Violet Colour. Or grind a little Sap Green

in fair Water, to which add a small quantity of Pot-asse Lye, and it will change it immediately to a very bright Yellow. The fading colours extracted from Flowers, as Water tinged with red Roses, upon the addition of a little Lye becomes Green; and a little Blewlake dissolved in Water will turn Green upon putting in a little of this Lye: But this Lye utterly spoils the Black-Dye, by turning it to the bright colour, of the infusion of Gall. Now in the little foregoing Tract of Silk Dying, I remember 'tis directed to rince the black Silks out in Pot-Ashe Lye, yet it requires some consideration whether it really doth any good or rather no hurt.

The *Indians* burn an Ash from the leaves of a certain Tree called *Adam's Fig-tree*, and boil it up till it becomes a very sharp Lye, in which they soak their Raw Silk just as it comes Yellow from the Silk-Worms, so long till it becomes white as Snow, as *Tavernier* tell us in his *Voyage to India*, Chap. 7. where he describes the Kingdom of *Assem*.

Undoubtedly this Pot-Ashe, and all Wood-Ashe-Lye must be extraordinary strong when 'tis several times boiled with unslaked Lime and Water, as the Soap-boilers do, for then it becomes so corrosive and sharp that it crumbles Hair and Feathers into pulse.

A General

INSTRUCTION FOR DYING

Woollen Manufactures all sorts
of Colours :

AND FOR

The Culture of Druggs
OR

Ingredients used therein.

IF The Manufactures of Silk, Wool, and Thread, conduce very much to the Improvement and Advantage of Trade; Dying, which adorns them with that agreeable variety of Colours, in imitation of what is most Beautiful in Nature, is the Soul which animates them; and without which they would be Spiritless Bodies.

Wool and Silk which in their natural Colour, rather shew the rusticity of the times, than any Genius in Man or the politeness of the Age; would afford but a very

ry indifferent Commerce, if Dying did not give 'em those Beauties, which cause a demand, and render 'em desirable even amongst the barbarous Nations.

All visible things are distinguish'd, and become desirable by their Colours; and 'tis not sufficient that the Colours are fine, to support and encourage the Trade of stuffs; but they ought also to be good and equally lasting with the Stuffs themselves. The example of Nature its self clearly informs us of the difference: For if she bestows but a weak Colour upon Flowers, which quickly fades; she alters her measures in Herbs, Metals and pretious Stones, which she endows with a stronger Dye, and a Colour proportion'd to their duration.

* A worse sort of Woad so called. The Best being called *Pastel*.

† Racine from, whence Couleur De Racine i.e. a Colour made from several parts of the Walnut Tree.

We have in *France* great plenty of Woad, (**Voide*) red Madder, Chermes Berries, *Spanish* Broom and † Walnut Trees; not to mention several other Ingredients; the Enumeration, Culture and Advantages of which, I shall shew in the Twelfth Part of the Instructions; and indeed we want only Cochineal to make us possessors of the Six best Druggs for Dying. Are not we then blind Enemies to our own welfare, in despising these excellent Dyes, and draining our Native Country of its Money to purchase unprofitable Druggs of strangers, which only serves to Bastardize our Dyes and ruine our trade in Stuffs; and in the mean time ingratefully reject the Bene-

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Benefits which liberal Nature advantageously distributes to us.

'Twas for this reason that His Majesty out of His Justice and Prudence, caused general Rules to be made for the better encouragement of Manufactures and Dying, and made them be Registred in His Presence in the Court of Parliament of *Paris* *Agust* 13 1669. and sent Commissioners to put them in execution in all His Provinces, the success of which has discovered its self in a very advantageous reformation in all our Manufactures. But as 'tis impossible to remedy at once all the abuses are crept into the Manufacture of Dying alone, by the injury of Time and the Villany or Ignorance of Men: And as 'tis not to be expected that any thing should be absolutely perfected in the beginning: So Time discover'd other evils which wanted to be cured and faults which wanted to be mended. But His Majesty being inclin'd to put His last Hand to this Work; was of opinion that it could not be better done, than by causing Instructions to be drawn up more extensive than His Rules; which shou'd not only be capable to direct the Dyers in the observation of the mention'd Rules, and preparing good and Beautiful Dyes: But also to enable the Judges of the *Police* &c, to Correct the abuses.

But perhaps some may object against this Instruction; that it is too exact, that it discovers too many of the Secrets of Dying, and gives strangers an opportunity to take
advan-

advantage of it. But as it is impossible to instruct *French* men otherwise, and we cannot be too nicely exact to prevent the decay and prevent the welfare of this Art; this objection seems too weak to deprive the publick of this Work; especially if we consider that the utmost care that can be taken to keep up the Secrets of Dying, cannot hinder some to whom they must be intrusted from publishing them in a strange Country, if encouraged with the prospect of a small advantage to themselves but; and on the other side Strangers can reap no benefit by this instruction, without producing in their Country a greater demand for the Dying Materials which *France* affords, the Profit of which will abundantly compensate our Secret of Dying. And we cannot but observe that the *Spaniards*, who by all possible means have endeavour'd to keep their Trade to the *Indies* close lock'd up, have not made so good a Market of it as the *Hollanders* who Publish'd theirs as much as possible by their Writings.

Others assert that Dying ought to be left free, and without the least restriction, because the good and durable Dyes enhance the price of our Stuffs, and consequently hinder our Trade by lessening the demands: But the answer is easy, for this rise of the price (whilst the Money staves in *France* by reason of the use of our own Druggs) being much less, than the profit that arises thereby, cannot be considerable nor injurious to the publick, for 'tis well known
that

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that a Cloth of fifteen or twenty *Livres* the Ell, being well Dyed with red Madder, is but fifteen or sixteen *Sols* the Ell dearer, than one that is not, nor does the same Cloth well Dyed with Woad become any dearer than as with Madder; tho', in the real value, Beautiful Wearing, Goodness of Colour, and Lasting of the Stuff, 'tis one third better. Experience convinces us that the *Spanish* black Cloaths have always been preferred to the *Dutch* and *English* purely for the excellence of their Dye; tho' the Wool is of equal goodness and the make of the latter incomparably better than *Spanish* and much cheaper.

'Tis impossible to wear Purple, Dove Colour, deep or light Violet Colours (Dyed with Brasil Wood) one month without fading, soiling, spotting and staining: And these Colours after they are Dyed Crimson cost indeed somewhat more, but you have then a Colour which will continue Beautiful as long as the Stuffs themselves, and if Spotted with dirt or grease can easily be Scoured and cleaned without danger of losing or injuring the Colour.

* *Rouge de Garance.*

The Red * Madder-dye is a Colour which never fades or changes, and is near as cheap as that done with Brasil which is a bastard Colour, besides that the former grows in *France* and the latter is the product of a foreign Land.

Indigo which produces a bastard Colour is only used because it is sometimes cheaper

per tho' often dearer than Woad, which yeilds one of the best Colours in the World, and hath formerly vastly enriched *Langue-doc*. The first Drugg being a stranger, wou'd it not be reasonable to prefer the the second for being our own, tho' we had no respect to the fineness of its Colours?

The difference in the price betwixt a true and a bastard Colour in narrow Stuffs is so small, that the best Black of the Serges *de Rone* or *de* * *Challons* cannot cost above four *Sols* more than the worst and the *Razes de Chartres* and *Etamines d' Amiens* but two *Sols*; and yet those who are to wear them would not be without the Colour for one third part of the Stuff.

* Vulgarly Serge
Shalloons.

In this Instruction there is a good provision made for Stuffs of small value that they may not want a Dye suitable to their fineness and duration, without being at a great expence; tho' Dying never makes the Stuffs much dearer without the Colour its self be extraordinary, and the Stuffs thereby rendered more vendible.

If the difference in the price betwixt a good and bad Dye is inconsiderable in Stuffs, 'tis yet less in Woolls which are used in mixed Stuffs, for they don't require an extraordinary bright Dye; neither do they take up many nor any very dear Druggs; because in Stuffs of this nature Dyed Wool is commonly mixed with raw or undyed, and good and dear Colours with worse and cheaper.

One Ell of Cloth of Ten, Twelve or Fifteen *Livres* the Ell, weighs about three pounds, in which we need put no more than a third or fourth part of Violet Crimfon Wool in the mixture; and tho' that be the dearest Colour which can be used in this mixture yet according to the 48 Article of this Instruction with a small ground of Madder or wild or Bastard-Cocheneal, the price of Cloath will not be raised above five or six *Sols* the Ell higher than the bastard Dye tho' the mixture is really one third better in goodness.

If there are other Dyes which enhance the price of mixt Cloths equally or near as much as Crimfon, there are several others that do not augment the price above two *Sols* the Ell, besides in a mixt Colour where a third part Crimfon (or any dear Dye) is once used, for Thirty times, there is not above $\frac{1}{8}$ or $\frac{1}{10}$ or none at all used.

An *Etamine de Rheims & de Chalons* which ought to be 11 or 12 Ells long, and weighs ordinarily about Three pounds, requires but a Third or almost one half of black Wool in the mixture, which being first Dyed Sky colour with Woad is but Four or Five *Sols* dearer than unwoaded Wool, which doth not come to above Five *Deniers* the Ell, not to speak of those *Etamines* where they don't put above one Sixth or Eighth of black Wool, which makes the difference still less, tho' the Stuff is one Sixth part better to the buyer, besides that the black which has been first Woaded blew wears better

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and is much stronger than that which has not.

He must be very ignorant in Dying and the Manufacture of Stuffs, that can believe that Woad renders the Wool hard or untractable, and tears or hinders the combing of it, when 'tis very well known that these inconveniencies proceed from the black Dye for want of the necessary ingredients, or due care in the performance; when if the Wool is Woaded, less Coperas is requisite to the Black, which is the only material that hardens it; but in the Dying Wool with Woad and black according to this Instruction, all these inconveniencies are avoided, and the small charge which arises thereupon is very advantagiously repaid.

Some will object that good Druggs are harder to work than the slihter, but this objection is in part owing to the pleasure which Men take in doing slight work rather than good, and the uncommon pains they take in hopes of greater profit by the Bastard colour than the true: But if they would work with the same pleasure and application on the true Dye; they would succeed as well in these as in the others, and those who are not well enough instructed in the Art, have no more to do but to follow this Instruction, which will remove their greatest obstructions, and inform them in the knowledge of several Drugs that very few knew to be of use in Dying.

It may also be alledged that several provinces abound in different Herbs, Roots, &c.
pro-

proper for Dying, and have not only Commodities, but manners of Working peculiar to themselves, which they will be deprived of the advantage of by this uniformity, that is to be settled in *France*; also that Dyers will hereby loose the advantage of what secrets they may discover in their Art. But as this uniformity only regards the establishment of the publick good, His Majesty does not hereby pretend to seclude any of these advantages to the Dyers, but only till they are viewed and examined upon the spot to see whether it be more profitable than injurious; in which case, no person will be deprived of the use of their own materials if they are good, and if know the most advantageous manner of using them.

As Dying well is not without its reward of honour and profit which accrues to the Dyers in recompence of their labour, so the ill Dying will not continue without its due punishments; for all the avenues of Favour which were used by the subtil and humble Addresses of Merchants and Dyers to put off their Bastard Dyes are now close shut up, because Orders are given throughout the Kingdom to view and Mark all Merchandises, not only at the place of their Dying, but also at the places of Sale and Transportation, under the penalty of confiscation of those which are ill Dyed, are either not Mark'd or wrong Mark'd.

The abuse was also grown frequent in the Manufacture and Dying of Hats as well as Stuffs, for which reason His Maie-

sty hath been pleased to correct it, by a general Rule which is Eſtabliſhed as a Law, and Order, for the time to come, amongſt all the Hatters of the Realm, and hath thought neceſſary, to insert in this Inſtruction, the Manner of, and the Drugs proper for a good Black Dye, to the End that the Ignorant Hatters might be inform'd and furniſh'd with Inſtructions, to perfect themſelves in Dying, as well as the Judges and Commiſſioners be enabled to diſcover and correct the Abuses, which have ruined commerce in the Kingdom, and in Forreign Countries.

It tends then to our own advantage to Dye good Colours, as well as to the Publick Good and advance of the reputation of the Trade and Manufactures of *France*. This Inſtruction furniſhes us with the means, to do what our own Conſciences exact from us, that being engaged in an employ, we ſhould apply our ſelves to perfect it as much as in us lyes, and joyfully embrace all means that may enable us to do well, and prevent our doing Ill, which Obliges us to praise the Juſtice and Goodneſs of our King, who by a Happy Neceſſity has conſtrain'd us to do well for fear of being Punished, as knowing that this wholeſome fear is the Foundation and beginning of Wiſdom amongſt Men.

THIS

THIS
INSTRUCTION
IS

Divided into Twelve Parts,

In Which is Contain'd,

IN the First, in *vij* Articles, the Five Principal Simple Colours for the Dying of Wool, the necessary Preparation of Stuffs, to the end they may thoroughly imbibe the Colour of the Dying Ingredient.

In the Second, in *xxvj* Articles, beginning with the *vijjth*. and ending with the *xxxjst*. The best manner of using the Dying Ingredients, and of Dying to Perfection the Five Principal Simple Colours, and consequently all others, used in the Dying of Wool, which proceed from them.

In the Third, in *xjjj* Articles, beginning with the *xxxjrd*, and ending with the *xlvth*. The Mixtures of Colours proceeding from the Five Principal Simple Colours.

In the Fourth, in *xxii* Articles, beginning with the *xlvth*, and ending with the *lxvith*. The Compound Colours, which are produced by the Mixture of two or more, of the Simple Colours.

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In the Fifth, in *xxjj* Articles, beginning with the *lxvij*th, and ending with the *lxxxviii*th. All Dyers are divided into two sorts, the great or good Dyer, and the lesser Dyer, with the Reasons of this Division; the Colours and Stuffs which each of them are freely permitted to Dye, the Apprentiship, Service, and Master-pieces which each Dyer ought to perform.

In the Sixth in *xxiv* Articles, beginning with *lxxxix*, and ending *cxjj*. The Mystery and manner of Dying Wool for Tapistry and Canvas, the method of reducing the manner used at *Roan* and other places to the great and less Dyes, the custom and necessity of using Leads or Signets to prevent the debasing our Stuffs and the falsification of our Dyes.

In the Seventh, in *xvj*, beginning with *cxjij*, and ending with *cxvij*. The Druggs used to Dye the great or good Dyes, and the lesser Dyes; also those which are Prohibited. The necessity of keeping their Books well, and of visiting the Dyers of both the great and and lesser Dyes.

In the Eighth, in *xxxjj* Articles, beginning with *cxvijj*, ending with *clvjij*. The reasons why some Druggs ought to be Prohibited and others permitted; why there are some which ought to be allowed in some Colours, and forbidden in others, with other reasons which may serve as an answer to the Memorial design'd to be presented on this affair, and to the Objections which may be raised against this Instruction.

In

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In the Ninth, in *xxxvij* Articles, beginning with *clix*, and ending with *cxcjv*. The Materials and manner of preparing a good black, with the necessary Woad and Madder grounds suitable to the Goodness and Duration of the Stuffs. Also the method of preparing Stuffs, with Galls &c. And the finishing of Black.

In the Tenth, in *xlj*, beginning with *cxcv*, and ending *ccxxxv*. The Grounds and Manner of Dying Black those Stuffs which have chang'd or lost their colour; the manner of Dying Black those which shou'd be mended, and Wools serving for Mixtures; also of Dying slight Stuffs very cheap, with the Druggs necessary to, and the way of making the Proof boilings to try the Goodness of the Dye.

In the Eleventh Part, in *xx* Articles, beginning with *ccxxxvj*, and ending with *cclv*. Of the Dying of Threds, Cloths made of Hemp, Linnen, Cotton, with what is necessary to the Perfection of Silk Dying; also to the making and well Dying of Hats.

In the Twelfth, in *lxjj*, beginning with *cclvj*, ending with *cccxvjj*. The Advantage which will accrue to the publick, by the Use, Culture and greater Trade in the good Druggs which abound in *France*, such as the Woad, the better and slighter sort of Madder, *Spanish* Broom; Walnut-Tree-Root, Rinds and Shells, Chermes; Berries, the Antient Purple *Sarrette*, *Genistrolle*, *Rodoul*, *Fovic*, Tartar, dry Tartar, Verdigrease, Pot-Ashes, calcined Tartar, Ashes, Mineral Salts

used in Dying, Allom, Galls, Alder Bark, Fustel, Trentanel, Malherbe, Garouille, & Orseilis, with the conclusion of this Instruction and the Advantage which may Annually accrue to the Publick.

And Lastly a Table of the Articles contain'd in this Instruction.

PART I.

§ I.

IN Dying, Five principal simple sorts of ^{Five Chief Simple Colours.} Colours are used, from whence all others are derived or composed.

II.

Those Colours are Blew, Red, Yellow, Tawny or Brown, and Black.

III.

Stuffs to be Dyed Red or Yellow must be boiled with Allom, Tartar and other Ingredients, which afford no Colour themselves, according to the Directions given hereafter. ^{Preparation of Stuffs.}

IV.

Those to be Dyed Black, must be boiled with Galls and Sumach, and for want of Sumach, with *Rodoul* or *Fovic*; being well prepared with these Ingredients, they turn of a Colour betwixt Tawny and Grey, and 'tis here to be observed that the Tawny or Brown is the same with the Colour Dyed with the several Parts of Walnut-Tree.

V.

V.

But those Stuffs, which are to be Dyed Blew or Brown, must be Immediately taken from the Fulling Mills, and so be Dyed without any Previous preparation.

VI.

The Stuffs
ought to be
well Clean-
ed.

The cleanest and Whitest Stuffs, which are made of the finest Wool, take the most bright and beautiful Colour.

VII.

Thee Stuffs whitened with Sulphur or Ceruse, ought to be very well cleansed from the Pernicious reliëts of those Ingredients, which hinder the penetration and beauty of the Dye, and prevent the Union of the Colours.

Observations.

After the Author in the third §. hath directed us to boil our Stuffs, design'd for Red or Yellow, in Allom; in the Fourth §. For Black, in Galls; in the Fifth §. He proceeds to instruct us to Dye Blew and Light Brown, just as they come from the Fulling Mills: But we ought to take Notice that tho' Woad, Blew is a very subtil Penetrating Colour, which tinges very freely, yet Indigo is stronger, and to say truth
Cor-

Corrodes. Wherefore in the first preparation of Wool, before it is brought to the Ful-ling Mills, it ought to be very well cleansed with Hogs-grease; But in our *German* Dye-House, Allom is frequently used in Blew's and is become sometimes necessary by reason of the great use of Indigo, (as will appear in our Observations on the following Chapter) I mean in the preparing of Stuffs. Tho' others are for putting the Allom into the Vessel with the Dye, the first way makes the Dye take the better, and the last as well as the first, turns the Dye more towards the Black, than right Indigo would, if its strength were not somewhat broken by the Allom. For it would then become a sort of Violet. This is needless in Woad; In the preparation for Reds and Yellow Dyes, § 3, the Allom is design'd to make the Colours take the better; only in Blacks we ought to consider whether they are first Dyed Blew, for the Best Blacks are those first Dyed with a Blew ground, especially if with Woad alone, which produces a Colour very different from Indigo as we shall shew. And if Black were Dyed without any other ground, Galls wou'd be very necessary, tho' in our Country they are seldom used, for they perform the whole Dye with one Suds; but every Place hath it's particular Method.

As to the 7th §. we seldom Whiten whole Pices of Stuff this way that come to be Dyed, unless it be Womens Gowns, which having been worn White a whole Summer, are to be Dyed against Winter; but the remedy

medy is easy in either case for Soap Lye or Lime will remove the rough Hardness of the Sulphur, and fair Water will remedy it in Ceruse.

P A R T II.

The Art of Using the Druggs to the best Advantage in Dying, and of Preparing the Five Principal Colours to Perfection, and consequently all others which are composed of or derived from them.

VIII.

THe Blew Dye is prepared from the best Woad called Pastel, which grows in the upper *Languedoc*, and is the best and most necessary Drug in the Art of Dying; with *Voüede*, which is a sort of Woad, that's weaker and less Substantial, and grows in *Normandie*; and with Indigo which comes from the *Indies*; which (tho' used alone is none of the best Colours, yet) never misses of success, if you do not mix above the quantity of Six Pound, with every Bail of Woad, and if it be not used before it is prepared in Copper and in the two first heatings.

Blew is prepared from both sorts of Woad and Indigo mixt together.

Six Pound of Indigo to every Bail of Woad.

IX.

The Dyers ought to be left to their liberty, to put the Six Pound of Indigo in the great

great Copper, or to reserve a Part for the first, or for both heatings, that they may the more Conveniently prepare their lesser Dyes; but they ought to be strictly forbidden to use Indigo, without it be first prepared with Tartar Ashes, or otherwise than with Woad, or put any more then Six Pound to every Bail of Woad, or to Heat it any more than twice, because a failure in any of these Particulars will produce a false or Bastard Dye. For the Substance of the Woad which is Necessary to correct the Indigo, will be wasted in the Working in the Copper and the two heatings.

Indigo ought to be prepared.

Alone a bastard Dye.

X.

The *Voüede* or weaker Woad is not strong enough to correct the ill qualities of the Indigo, if not assisted by the virtue of the Pastel or best Woad, especially in the heatings where it is void of the substance which is wasted in the Copper. The quantity of Indigo ought not to be regulated by the weaker Woad, but by that of the best when it is put into the Copper, if you would have a good blew fit to be afterwards Dyed black.

XI.

If the Dyer is obliged to use the weaker Woad without the best, he ought to put so little Indigo into the Copper that the Woad may be able to correct it, a pound of

One pound of Indigo to 100 of lighter Woad.

of Indigo being sufficient for a hundred of this sort of Woad, and he ought to put the Indigo and, the Woad in together, and hinder their growing hot again for the reasons above, mention'd, of which he ought to take particular care.

XII.

Indian
Wood, Bra-
sil and Or-
seille falsify
Blews.

The Dyers to help and highten their blew use Brasil Wood, or *Orseille* or *Bois D' Inde* Indian Wood, which bastardises the colour, and makes it wear ill. This falsification cannot be better prevented than by a strict Prohibition that the Dyers of the great Dye should not be suffered to have them in their Houses, nor use them in any colour in the great Dye.

XIII.

How to
mend the
ground of
Blews and
render them
more lively.

The Blew Dye may be rendred brighter by rincing the Stuff after it is Dyed and well washed in a little warm Water alone, or with a little Allom: But it is much better both for the Stuff and Dye to fill it with a liquid or melted Soap, and afterwards to cleanse it very well from the said Soap. The deeper mixtures of blew may be helped and hightened without any inconvenience, by first rincing them in Suds and after in Cochenill'd liquor; but if the same measures are taken with Sky colours and the lighter blews, they will lose their bright Blew Lustre and incline to Grey.

XIV.

XIV.

Bran and Starch Waters being good to dry and cleanse Blews from any clammy foulness, when they are design'd for another colour, are of no use in brightning Blews which are finished, as well because the Bran is apt to dry them too much and leave something in the Hair of the Stuffs which spots it like a Leper and hinders the Graining and Shearing the Stuffs, as because the Starch Waters leave a sort of mealiness upon the Stuffs, and deprive them of the necessary pliable softness.

XV.

There are Seven sorts of good Reds, ^{Seven sorts of good Red.} which make four mixtures in the Composition of other Colours. The first is the Scarlet, called the Gobelins or *French* Scarlate; the Second Crimfon; the Third Madder Red, or *Rouge de Garance*; the Fourth, half Scarlate *Rouge de Demy grain*; the Fifth half Crimfon; Sixth *Rouge de Nacarat de Bourre*, or Scarlet shred Dye, a Colour somewhat paler than Orange, enclining to Crimfon; The Seventh The *Dutch* Cochineal Scarlate. These seven sorts of good Red, may be reduced to three from the three principal Drugs which gives them the Dye, namely the Kermes Berries, Cochineal and Madder; but this division not being so proper for the mixtures, or Composition of Colours, we shall rather make use of the former. XVI

XVI.

French. Scar-
late

The *French* Scarlate after it is Boiled with Starch Waters, and again boil'd with other Starch Waters, Allom, a little dry Tartar, and Arsenic, is Colour'd Red with Agaric, Starch Waters, and Chermes Berries in grain and paste, of which Berries the best sort come from *Languedoc*. Some Dyers superadd Cochineal, others Fenugreek, after which it is brightened with Starch Water, Agaric, Tartar and Turmerick. The Scarlates which are design'd for a deeper Dye, ought not to be brightned, if we don't design they should encline to the Scarlate shred, Nacarar, or Orange Red.

XVII

Crimson or

Crimson after 'tis Boiled with Starch Waters, Allom and dry Tartar is tinged Red with Starch Waters, Tartar and Cochineal, *Mosseque* or *Tescall*, which comes from the *Indies* and is the dearest Drug in Dying.

XVIII

Madder
Red

The Madder Reds after being boiled with Allom, dry Tartar, Bran and Starch Water, are ting'd Red with the finest Madder, which comes from *Flanders*, and which may be Cultivated in several parts of *France* where it grows naturally. Some use Realgar or Arsenick, in the *Bevillion* or boiling Ingredients

ents, others common or other Salt with Wheat Flower in the Madderage, or rather some Agaric or Spirit of Wine, with Galls or Turmerick.

XIX.

Half grains or Half Scarlates, after being boiled in the same manner as Scarlate, are tinged Red with Agaric, Starch Waters, one half Madder, and the other Chermes Berries, some adding Turmerick when they brighten them in the same manner as Scarlate.

Halfgrains
or demy
grain.

XX.

Half Crimsons after boiling as the Crimsons or Madder Reds, are turn'd red with one half Madder, and the other half Cochineal.

Demy or
half Crim-
son.

XXI.

The Nacarat Flock or shred-Red, is prepared by boiling the Scarlate Flocks or shreds in a *Bouillon* with dry Tartar, and afterward with Starch Waters, Allom and Dry Tartar, then moderately Madderred and afterwards soaked in a Lye made of Tartar Ashes, clarified and corrected with Urine, and other light non-dying Ingredients; this is to be used as an essence extracted from the Colour of the Madder. But your Stuffs ought to be first Dyed Yellow, before they are fit for the Reception of this Dye.

Nacarat
Flock Co-
lour.

M

XXII.

XXII.

*Dutch Scar-
late.*

Dutch Scarlate is boiled with Allom, Tartar, Sal-Gemma, *Aqua fortis* and Pease Flower in a tin Kettle, or else with *Aqua fortis* wherein Tin hath been dissolved; this Colour is tinged with Starch, Tartar, *Aqua fortis* and Cochineal *Messcal* or *Tescalle* in the same Kettle. The manner of Cochinealing it must differ according as the manner of boiling does. This Colour is one of the brightest, it easily soils or spots either by Dirt, standing Water, Lye or other accidents, of which especial care ought to be taken, tho' there is no other Remedy in this case, than to repass it through the Dye.

XXIII.

*Brazil Red
a bastard
Dye.*

Besides these sorts of Reds which are good dyes, and ought to be permitted, there is also another sort made with Brazil Wood, which ought to be prohibited because it produces a bastard Dye, and the Sun, the Air, the Dirt, the least sharp or Salt Water soils and spots it, and because it is a strange drug which draws a great deal of money out of *France*, besides that all the mixtures, which are made with this Colour, may be very well supplied and easily imitated with good Reds and Ingredients, that serve to give and prepare Stuffs to receive a red Dye.

XXIV.

XXIV.

The finest Yellows after being boiled with Allom alone, or with Allom and dry Tartar, are Coloured with *Spanish Broom*, which grows in several Provinces in *France*. Turmerick which comes from the *Indies*, produces also a sort of Yellow, which is none of the best Colours; but serves to tinge Yellow and brighten those Colours wherein Chermes Berries, Cochineal and Madder is used: The Yellow Wood also which comes from the *Indies*, produces a Yellow enclining to Gold Colour.

Yellow made with *Spanish Broom*.

Turmerick and *Indian Yellow* Wood produce also Yellow Colours.

XXV.

A Third sort of Yellow is made with *Sarette* and *Genestrelle*, which because it is not so fine as that made of *Spanish Broom*, serves only for green Phillamorts and other compound Colours, where it is very proper: it may also be used to dye Carpets, coarse Wool and Stuffles, which don't exceed 20 pence the Ell, in Countries where there is no *Spanish Broom*.

Sarette and *Genestrelle* afford another sort of Yellow.

XXVI.

The Walnut-tree Brown is made with the Root, Bark, Leaves of the Tree, and Nut shells, which afford a good Colour. A good Brown may also be made with Chimney Soot; but that being of an unfavoury smell,

Brown is prepared from the Root, bark & leaves of the Walnut-tree & the shells of the Nuts. Soot is also used in *Phillamort* or Ox colour.

and Wal-nut Trees being very plentiful in France, tis only used in Phillamorts, Ox Colours and other Dyes of that sort, where it is more proper and yields a finer Colour than Walnut-tree; and it may likewise be used in Olive Green or Olive Colours.

XXVII.

Garouille for
the *gris de*
Rat or Rat
Colour.

Garouille yields a Colour betwixt Brown and Grey, and gives a good lustre to mixt Wool, and being cleaned in the fulling Mills may be permitted for the mixture of Wool of a rat coloured Grey, and not for stufes or other Colours besides the Rat Grey mixture.

XXVIII.

Trentanel,
Malherbe
with foot
forbid.

Trentanel, Malherbe, Fustel and other ingredients, yield a Colour betwixt Yellow and Brown; some mix foot with them, to make a perfect Brown, but this and other Colours which are finer being more certainly prepared from *Spanish* Brown, and Walnut-tree roots, and the two first smelling very offensively and being Prejudicial to the Eyes of those who use them, 'tis proper that the General use of them should be forbid.

XXIX.

Black is prepared or Galled with Galls which come from *Aleppo* or *Alexandria*, called *Galle á L' Epine* Thorn Galls, and Sumach; and

and in Places where they have no Sumach with *Rodoul* or *Fovic*, which grow in several Places in France, and which are equivalent to Sumach : A Black is also made of Coperas and *Indian* Wood, which last though alone it produces a bastard Colour, yet when used with Galls and Coperas it affords a more durable bright, soft and blacker Colour upon Stuffs, and wears better, than if Galls and Coperas were used without it; but care ought to be taken that too much of it be not used, and that Woad and Madder be not used too sparingly any more than Galls and Coperas, the *Indian* Wood being to be added to the rest, without any diminution of their proportion. But if you would make the hair of the finest and midling sorts of Wool softer or more flexible and pliable to the fingers of the Spinster and in the fulling mill, you ought to augment the *Indian* Wood, and diminish the Coperas in proportion in the dying Wool Black. You may also use Yellow Wood with a little of the finest verdigrease.

Black with Galls, Sumach *Rodoul Fovic*, Coperas Brasil, Yellow Wood and Verdigrease,

XXX.

Another sort of Black is made with Alder-bark and Smiths Cutlers or Grinders dust, but as this alone does not yield a good Black, but makes the Stuffs and Wools rough and hard as well as really injures them; this sort of Black as well as that wherein filings of Iron or Copper is used, ought to be absolutely forbidden in all sorts of Goods and Wool.

Smiths dust, filings of Iron or copper absolutely forbidden in all blacks and all other colours of Wool or stuffs.

XXXI.

Besides the Five Simple Colours, that of *Orseile* makes an agreeable mixture from Peach to blossom Colour Pale Pink, Light Flax, Amaranthy or Red Purple; and *Indian Wood* tinges Stuffs boiled with Allom and Tartar, with a mixture betwixt the light and the dark Violet: but as these two are bastard Colours which may be made good and one may easily imitate that of *Indian Wood* and that of *Orseile* throughout the first Colours, it is necessary to forbid *Indian Wood* absolutely and to permit *Orseile* only in meaner Stuffs not exceeding 20 pence the Ell.

Observations on the Second Part.

FROM the 7th §. to the 15th §. exclusive, the Author treats of the Permission of the most proper ingredients in the Blew Dye; and here 'twill not be improper to remark; That in our common Dye Houses in our Blews the misuse seems to grow, for they use Indigo alone boiled with Madder and Pot-Ashes, or at the most temper'd with half Woad. An Example of the First is as follows, which is used and called good Blew by our Diers, &c. Take of Indigo that is good and clear one Pound, of Red Madder as much, of Pot-Ashes from three to four Pound, four Ladles full of unslaked Lime

Lime, four Handfulls of Wheat Bran, and lastly about eight quarts of Urine, let it boil four Hours, fill the Kettle half full of Water, and after that put in more Water by degrees, keep it lukewarm Twenty four Hours, and if it is too weak, put in of un-slaked Lime and Pot Ashes of each a Laddle full to strengthen it; we ought also to steep the Indigo in Urine over night to dissolve, otherwise the Lime cannot be well separated from it. If more Indigo be put in, the Colour will be Blacker and harder: The Pot Ashes is ordered in so large a quantity as well to break the Madder, as because it will encline to Red and bastardise the Blew, so that a sufficient quantity thereof is required; tho' an unequal quantity is mentioned, yet if it be boiled in the least too much, the whole Dye is spoiled or at least rendred weak, or fading and not durable, and indeed the dye it self at best is not good, but apt to spot with the least drop of sharp or acid liquors that can fall on the Stuffs. The following preparation of Indigo and Woad is much better. After your Water hath boiled a little in the Kettle put in four or five Handfulls of Wheat Bran, four lb of Pot-Ashes, let it boil a good Hour, then put in four lb of Madder and let it boil a quarter of an Hour, the Copper being full to about Six Inches and cover'd; then add Indigo and Woad of each Six lb and Eleven lb of Pot-Ashes, put them into a little Kettle of Warm Water, let it boil moderately about half an Hour,

stirring it continually and then put it into the Copper to the other. The Indigo Dye or that prepared from Indigo alone, must be done by a Lye made with Pot-Ashes with the addition of four or five Handfulls of Bran, $\frac{1}{2}$ or $\frac{3}{4}$ of a lb of Madder, let it boil $\frac{1}{4}$ of an Hour and settle, after which beat your Indigo to a fine Powder, in a mortar, then put it to the Lye and let it settle, and pour on fresh and decant till the Lye becomes clear and free from all manner of Colour; but if the quantity of Woad be doubled and instead of Six Pound of Indigo you use Seven lb, the Dye will be much better'd, and rendred more agreeable. However the first preparation of Indigo is uncertain, and therefore is not to be chosen, and this alone is good; it renders the Indigo conformable to the mixture with the Woad, and makes it sharper or stronger, and when you use a staler Ground of Suds, is necessary. We ought to observe that Red of it self is fading and changing, and therefore to prevent spotting Madder ought to be used very sparingly, or omitted because it falsifies the Colour and enclines it to Violet, and if you would produce a deeper Blew, tis better to tinge it with the Cochineal purple dye of which our Author treats in §. *xiiiith*. As to §. *xvth*. where our Author enumerates Seven sorts of Red; in our Dyeries the Chermes Berries are but little used, for most Reds are Dyed with Cochineal, so that *French* Scarlate and half Grains are but seldom Dyed. The Crimson Madder Red, half Crimson and Nacarat

ac-

according to §. xxii. are more in use. In all Reds 'tis necessary to Allom the cloths, which is commonly done with two parts Allom and one part Tartar, but others corroborate the Allom with Bran, Starch, Pease and Bean flower; or in the Suds, with prepared Meal Water or Starch Water which are so named without distinction. This Meal Water is nothing else but a thin sort of leaven, which is to be made as followeth: Take about Five or Six Quarts of Wheat bran, boil it in rain Water about a quarter of an Hour, put also some cold Water in a little tub, and mix it with a Handful of leaven the sower the better; the only effect the Dyer expects from the Branis, that it softens the Water, and renders the Wool and Stuffs more pliant, and 'tis mostly used in the first Suds, which I mentioned. Allom Water, and the Meal Water, is also commonly mixt with the Dye. What effect Agarick hath is to the Masters in this Art themselves unknown, otherwise than by the prolix commendations of loud Mouth'd Fame, but wherein its Virtue consists no body can determine, without being of a soft Spongy nature it be somewhat assistant to, the *Aqua fortis* in absorbing the clammy fatness (which our Author §. xiv. ascribes to it.) And concerning its attractive Nature the Author seems to hint it when he tells us that Starch Water and starch, leave a sort of mealy Spots or mealiness upon the Stuffs; and Agaric by its attractive Nature and White Substance renders the Dye brighter and clears it.

As

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As for Arsenic, 'tis a very dangerous Drug; wherefore, twou'd be better to try Aquafortis, Spirit of Salt, or Sal-armoniac in the perfecting this Colour, and dismiss this injurious guest, for fear the very keeping it in our Houses, should occasion some ill accidents by it's Tattleless quality, and because it is Customary, after the Washing of new born Infants, for the first Week in (*Germany* and in other Countries also) to rub them with Scarlate Cloaths; and if this Drug be used, tho' in the least quantity, it may easily occasion very pernicious consequences. The Crimson Dye is very well known, and according to § *xviii*^b, may be very easily prepared, if it receives no damage from the Fire, upon the due care of which depends more than is imagined; as he that tries will find to his loss; however to oblige the Lovers of this Art, I will give the following proof of the preparation of this Dye: Make a Meal-water with four Wheat Bran, *Liquefie* it, and put it into Rain-water and boil them together, then take Cochineal, (which has the precedent Night been dissolv'd in Water) put in first a little in a Ladle into the Water, and then stir it about, and so on till you have put in all; then the Stuffs to be Dyed, being before Allom'd, are to be put in, and when that is done they may, if the Dyer pleases, be drawn thro' a Lye, to which may be added Tartar Ashes, or, rake of Cochineal and White-wine lees, or Tartar, an equal quantity, and put 'em into Hot Water, and let the Stuffs be rinsed in
it

it or drawn thro' it; some add a little Arsenic, but there is yet no good Reason given why. In the *xviii*th §. the manner of Dying Madder Red is prescribed, which is indeed not very difficult: One Pound of Madder is Sufficient to Dye *viii* lb of Stuff, it being first prepared and disposed to the reception of the Colour, by Allom and Tartar. Pot-Ashes very much heightens Madder Dyes. Bran or Bran-Water ought always to be mixt amongst the Red Dye. As for Brandy or Spirit of Wine, it brightens and throw's forth the Colours, in an extraordinary manner, searching into the inmost Parts of the Dye, and cleansing it from all *Terrestreity*, spots or soils, and by the use of it the Dyer will find an Incredible advantage accrue to him. Turmerick is used alone in the Yellow and the mixture of Galls turns it Brown, the Virtues of which you have in §. *iv*. Half Crimson of both sorts in §. *xix* and §. *xx*. may according to the Dyers pleasure, and capacity be used; that in §. *xxi*. called Nacarot Red is unusual, and unknown, and accompanied with a great deal of unnecessary Labour and Charge, and withal very Unprofitable because it is not lasting. The *Dutch* Scarlate is most in use and is well enough described in §. *xxii*. For every lb of Stuff, must be used *i*. Ounce of Cochineal, more or less according to it's Goodness; One Ounce and an half of Aquafortis; in the Alloming some put Sal-Armoniac in the place of Allom in the Suds; the Cochineal must always be beaten and prepared with Tartar. Scarlate

late is nothing else but a bright Crimfon, more or less changed to the Yellow, and Aquafortis is the Ground of the whole change, for in a Wine Glafs the Dye may be turn'd even to Yellow, and after bright again, and with Precipitating what the Dye consists of be brought to no Colour. That this Scarlate will easily spot, is too well known, and the Cause thereof very clear; and all Water brings it more or less to a Crimfon again. Starch encreases the Substance of the Dye, thickens it and renders it more Viscous, and stiffens the Stuff by its mealy Nature. The Fernabock Brasil Red, is very common in our Dyeries, for they Dye a sort of Crimfon with that and Pot-Ashes, mention'd, §. xxiii. tho' Experience contradicts his Assertion there. When we come to speak of mixt Dyes, we shall say something of a Scarlate, prepared from the Madder and Yellow Wood. Yellow is amongst us prepared with Dyers Weed, and finished with Broom; some use Melilot, otherwise called Wild Clavers, some Corn or Wild-Mary-golds, some Turmerick which is very Rich in Colour. Versfel Wood is also used as is the Gummi Gutta, for several ends. The Yellow Dye is not very difficult, its Foundation lyes in the vegetables, and then the Pot-ashes which heightens them. Turmerick Yellow Wood and Gummi Gutta, which some use, don't tinge the Stuffs kindly unless they be first prepared with Allom, and drawn thro' the Dye till it is Yellow enough. Turmerick and Gummi Gutta, are
used

used in the Yellowing of Scarlates as in §. xxiv. and xvi. and xviii. The Brown of §. xxvi is not much in fashion with us, tho according to the directions of the best Artifts, Walnut leaves and shells are Chiefly used in Silk Dying, the Wood and Root not being in use. Soot is also used tho' not alone, yet in mixt Dyes as our Author tells us. The Brown Dye consists mostly in mixtures, either of Red and Black, or Yellow and Black according to the Dyers pleasure. As to §. xxix. concerning the preparation of Black, you may find in our first Observation, that previous preparations of Woad or Madder Grounds or Boiling in Galls, are not in use amongst our Country Dyers, for they generally Dye Black with one Fatt of Suds only.

PART III.

Mixtures of Colours, which Proceed from the five Principal Colours.

XXXII.

THESE Five Simple Colours, compose several mixtures of Colours, beginning with lightest Pale, or Faint and ending with the deepest or Darkest. Mixture of Colours.

XXXIII.

The Blew mixtures are *le Bleu Blanc*, Blew Mixtures.
White

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White Blew & *Bleu Naissant* bright Blew,
Bleu Pâle Pale Blew, *Bleu mourant* faint
 Blew, *Bleu mignon*, --- *Bleu Celeste* Sky Co-
 lour, *Bleu Regne* --- *Bleu Turquin* Turkish
 Blew, *Bleu de Roy* --- *Fleur de Guesde* Spanish
 Broom Blossom; *Bleu Pere* --- *Aldego* --- &
Bleu d' Enfer.

XXXIV.

of the 7
 sorts of
 good Reds
 only 4 not
 us'd for mix-
 tures.

Of the Seven sorts of good Reds, there are only Four, from which we draw mixtures, namely the Madder Red, Crimson, *Rouge de Bourre* or Flock Red, a Colour somewhat paler than Orange, enclining to Crimson and the *Dutch* Scarlate. The Madder Red produces but very few, but we never draw any mixtures from the *French* Scarlate, neither from half Grain nor half Crimson, tho several mixt Dyes may be produced from the half Crimson.

XXXV.

Mixtures of
 Madder red

The mixtures of Madder Red are Flesh Colour, Onion Red with a little slackning of the Dye in the Copper; Flame Colour, Madder Isabella, Tile Colour, deep Madder Colour, *Gingeolin*, *Fujube* Colour being a Yellowish Red, and Madder Red. The Flame and Flesh Colours, as well as the Onion may also be Dyed with Cochineal, but the *Isabella* and the Tile Colours are the much better'd by rincing them in the *Dutch* Madder'd Scarlate.

XXXVI.

XXXVI.

The mixtures of Crimfon are Apple Blossom, Flesh Colour, Peach Blossom, Rose Colour, *Incarnadin* or *Anemone* Flesh Colour, Rosy Flesh Colour, deep Flesh Colour and Crimfon.

Mixtures of
Crimfons:

XXXVII.

The mixtures of the *Rouge de Bourre* or Pale Orange inclining to Crimfon are the same with Crimfon, but the Colours it produces are more Rosy or lively according to the well or ill ordering of the Fusion or Suds, or to the long or short duration of the Stuffs in the Allom, but the *Incarnades de Bourre* or Anemony Flesh Colours are not used to rich Stuffs (because the Dye is not so good as that of Cochineal) but only in stufes not exceeding Twenty pence the Ell.

Mixtures of
Flock Red.

XXXVIII.

The mixtures of *Dutch* Scarlate, besides the flaming Flesh Colour, Peach Blossom, Rose, Anemony Flesh Colour, and deep Flesh Colour, which it produces in common with the Crimfon and *Rouge de Bourre*, by adding Allom to the Suds; yield cherry, Nacarate or Pale Orange enclining to Crimfon, wild Poppy Colour, Fire Colour and *Dutch* Scarlate, which may also be produced with the *Bourre* or Crimfon Orange Dye tho'

Mixtures of
Dutch Scarlate

tho' it tinges the Stuffs too much toward the Yellow.

XXXIX.

Brasil Red
forbidden.

Brasil Red which is a bastard Colour, is imitated; but a much better Dye is prepared from Madder, Cochineal, and the Flock or shearing Dye, for which reason, I shall say nothing of this Mixture, it being forbidden.

XL.

The Dyers ought to be left to their own liberty to make their advantage of what remains of the Suds or baths of Good Dyes, that they may use them in Colours which their Judgment or Industry may prompt them to.

XLI.

Mixtures of
Yellow.

The Yellow's are the bright Yellow, Lemmon Colour, Pale Yellow, Straw Colour, common Yellow, and Gold Colour.

XLII.

The Brown
affords no
Mixtures.

No mixtures are prepared from the Brown, or Walnut Colour, tho' this simple Colour is used in the Composition of several Compound Colours.

XLIII.

XLIII.

Grey is a mixture of Black from the lightest sort which is White or light Grey, to the deepest which is Black grey, but if the Black be prepared from Galls and Coperas, 'tis not so proper in grey Mixtures, for you can draw very little Grey from thence; but *Indian Wood* is added in stuffs which don't exceed Twenty pence the Ell, and stuffs for linings not exceeding Thirty pence the Ell. The Colours which may be produced are the White or light Grey, Pearl Grey, leaden Grey, Lavender Grey, Beaver Grey, Wild-dove Grey, Slate Grey, Fish or Cod Grey, Brown Grey, Twilight or Evening Grey, *gris de Moron* and Black Grey; but these Colours are better'd by a little mixture of *Orseille*, or a slack Woad Dye but for the stuffs which exceed xx pence the Ell, or linings which exceed xxx, instead of Woad, Cochineal and Madder ought to be used, to render the Colour better and more certain.

XLIV.

'Tis also to be observed, that in Colours where Galls and Coperas are used, Sumach *Rodoul*, or *Fovic* ought to be used, according as the Colour which is design'd and the Industry or Convenience of the Dyer gives opportunity.

N

Ob-

Observations on the 3d Part.

In this Third Part is treated of the gradation of Colours; how from the lightest most Pale or faint, they proceed to the deepest or darkest, and that without any remarkable mixture with other dying Ingredients, only, by the quantity of the Colour or longer boiling of it, or by the addition of materials which in themselves afford no tincture, yet occasion a great Alteration in the Dyes. For example, in the Red Madder Dye, if the Madder be corrected with Pot-Ashes, it produces a genuine bright Red, but if it be augmented according to the weight of the Stuffs, it grows darker and darker, and put into the Liquor more or less Coperas, it yields an agreeable sort of brown, lighter or deeper, according to the degrees the Artist designs; but mix Coperas alone with the Madder, and it quite alters the Dye to an agreeable Colour betwixt dark Yellowish Red, and Brown, which may be experimented in the small compass of a Wine Glass; and the Artist hath an Instruction sufficiently advantageous what Colours may be heightened or improved, without the addition of other Colours, and with very little trouble. §, xl. Informs us that the remains of the Suds, after a piece of Stuff has been Dyed, are still of use; and for one Instance, 'tis to be remembered that the *Turkish* Blew Suds (one of the deep blews) after it has been used will Dye the *bleu blanc* or White Blew and the *Bleu*

Bleu Naissant or bright Blew if the Colour hath not been before too much exhausted, fouled or changed, or at the worst so much Pot Ashes put in as tinges the Dye Green, and bastardises it: But more especially the remaining Suds of Black is used in our *German* Dyeries for the Darkning or deepning all sorts of Dyes.

PART IV.

Of Compound Colours, which are produced from the mixture, of two or more Simple Colours.

XLV.

ALL mixtures of Compound Colours are made, by the mixture of two or more Simple Colours, but they diversity their Colours according to the diversity of Drugs, which are used in the Simple Colours, of which these are composed.

Discrip-
tions of a
compound
Colour.

XLVI.

From the mixture of Blew and *French* Scarlate are produced, *Couleur de Roy* the Kings Colour *Couleur de Prince* Princes Colour, and *Amarante* or Red Purple: when the Dye is brightned with Turmeric, it becomes of a *Pansu* Colour, otherwise called the *Hearts ease* Colour, which is

Blew and
French Scar-
late.

a sort of Violet Brown, and the Violet not brightned; but this mixture is very seldom used, because of the dearness of the Dye, and because these Colours are more conveniently and cheaper produced with Madder and Cochineal, than with Chermes Berries.

XLVII.

Blew and
Crimson.

From Blew and Crimson are composed Dove Colour, Purple, *Amarante* or Red Purple Crimson, *Pansy*, or Violet Brown and Violet Crimson. From the same mixtures (the Stuffs being less boiled in Allom and Tartar) are produced the Silver Grey, Flax Grey, Flax Blossom Colour, Violet Grey and *gris Vineux* (a sort of Grey enclining to Rose Wine Colour;) from these two mixtures also are composed, all sorts of Grey Crimsons, and other Crimsons where the Brown is mixt, as Lavender Grey, Sage Grey, Wild Dove Colour, Leaden Grey, Slate Colour, Brown Bread Colour and *Tristamie*. 'Tis to be Noted, that all those Colours are called Crimson, which are made with Cochineal.

XLVIII

Bastard Co-
chineal.

All Grey and other Crimsons, where Brown is mixt, may be prepared with Bastard or Wild Cochineal, as well as the Dove, Purple, *Amarante* or Red Purple, *Pansy* or Violet Brown, and Violet Crimsons, in Stuffs not exceeding xx pence the Ell; also all Wools used in the mixture of high prized Stuffs.

Stuffs render the price of Dying as easy as possible, without injuring the goodness of it. A little Madder may also be put into the Suds, in those Dyes which will bear it.

XLIX.

From the mixture of Blew and Madder Red, are compos'd *Coleur de Roy*, Kings colour, *Coleur de Prince* Princes Colour, and minime or deep Tawny, as well as Tawny, Amarantus Colour or red Purple, and dry Rose Colour, tho' the three last are much better prepared with half Crimson. The minime or deep Tawny often wants foot or something to deepen the Brown; all Greys are compos'd of Madder, which are finish'd with Walnut-tree root, leaves, &c. As Lavender Grey, Wild-pidgeon, *gris de morou*, Brown Grey, Twilight Grey, and other Greys of that mixture, together with brown Bread Colour, *Tristamie*, *Coleur d' Alyce*, Claver or Melilot Colour, *Breda* Grey, and other sorts of Colours, which are compos'd of Blew Red Madder and Brown.

Blew and
Madder Red

L.

From the mixture of Blew and half grain, are compos'd the Velvet Colour, Amarantus i. e. red Purple, the Tawny, and dry rose Colour; but this mixture is not much in use, because of the dearness of Chermes Berries, which is the principal In-

Blew and
half grain

redient in one of these Colours

LI.

Blew &
halls Crim-
son.

From the mixture of Blew and half Crimson is composed the Amaranthus Colour or red Purple, Tawny, dry Rose, Panfie or violet Brown and Velvet Colour; in the two last less Madder ought to be used than Cochineal because the Panfie and Velvet Colour must be redder than the others. From this mixture you may also produce the Grey Brown and the Evening Grey.

LII.

Blew &
Rouge de
Bourre or
flock Red a
colour be-
twixt O-
range and
Crimson.

From the mixture of Blew and the Pale Orange, or Flock Colour, are produced the same Colours, as with Crimson; but the use of it ought to be forbid except in Dove-Colour, Purple, Panfie, Violet, silver-Grey, Flax Grey, Flax blossom Colour and Violet Grey, in stuffs not exceeding 20 pence the Ell: if the Colours encline too much to the red, a little Allom and a weak Madder ground may be added.

LIII.

Blew &
Dutch Scar-
late.

A mixture of Blew and *Dutch* Scarlate is very seldom used, as well because of the high price of the Colours, as that the Colours of this mixture are more easily produced with Madder and Crimson.

LIV.

LIV.

There are several compound Colours, which are made of several mixtures of simple Colours; but they are produced finer, better, more conveniently and cheaper, from one Ingredient alone than several, as the Art and Industry of the Dyer will inform him in the disposing and use of it.

LV.

The mixture of Blew and Yellow yield, ^{Blew & Yellow produce a green} the Yellow Green, Gay Light Green, Grass Green, Laurel Green, *Malaquen* Green, Brown Green, and Dark Green: it affords also Sea Green, *Celadon* Green, a Green mixt with White or Willow Green, Parrot Green, Colewort Green, but these last require less boiling than the former. The Willow Green and the Brimstone Colours may be made with Verdegrease, a Drug made in *France*, Copper filings, and the Stems and Stones of Grapes; the best is made at *Montpellier* in *Languedoc*.

LVI.

From the mixtures of Blew and Brown ^{Blew & Brown,} alone, no Colour is ever made; but several are Produced from the mixture of Blew and Brown, with the Addition of Cochineal and Madder Red.

LVII.

Blew &
Grey.

Nor are any Colours composed of the mixtures, of Blew and Gray, without the Addition of some other Colour, as Brown or Red.

LVIII.

Red &
Yellow.

French Scarlate and Yellow are never used to produce Gold Colour, Morning dawning Yellow, Marigold Colour, Orange, Pale Orange, Pomgranate Blossom, Wild or Corn Poppy Colour or Fire Colour, because these Colours are more conveniently and cheaper prepared with Yellow, and Madder Red or the Flock Red. *i. e.* Pale Orange; But as those Colours which are prepared from Flocks or shreds, require a *Spanish* Broom Yellow, so the Gold Colour, Day dawn Colour, and Madder'd Orange requires the *Spanish* Broom Yellow with a little Turmerick in the Madding, as the Madder'd *Nacarrat* or Pale Orange requires Turmerick alone. *Issabella* and Buff Colours are also prepared with a little *Spanish* Broom Madder or Flocks.

LIX.

Nor are any Dyes made of the mixture of Crimson or Cochineal Red with half Grain, nor of half Crimson with Yellow, tho' Turmerick agrees very well with
Co-

Cochineal and Chermes Berries ; The mixture of Flock Red, and Madder Red being Sufficient, and more convenient to prepare all sorts of mixtures of Colours, which are composed of Red and Yellow.

LX.

Tho' it is said that several mixtures of Colours are never made, it does not follow, but they may be made, and that is only said to shew that they are unusual, or that they are finer or cheaper or easier done with one Simple Colour, than with the addition of others ; But the experienc'd Dyer knows how to use the good Drugs, which are permitted, and to turn the remains of his Suds (after Dying some Colour) to advantage in the mixtures of Colours, where he thinks it Proper, that liberty being intirely left him, as the Ill use of it for the Bastardising of Colours ought to be absolutely forbidden.

Several other mixtures of Colours are not mentioned because they are not usual.

LXI.

A mixture is made of Bastard Colours, with Brasil Red and Turmerick or *Spanish* Broom Yellow, which ought to be Absolutely forbidden ; This mixture of compound Colours being made very well and finer with the Flock Colour.

LXII.

LXII.

Red &
Brown.

From the mixture of Red unboiled, and Brown is produced Cinamon Colour, Chestnut Colour, Musk and Bearskin Colours. Musk Colour requires a rebate in the Dye with *Spanish* Broom, and the Bearskin with *Spanish* Broom or Browning. *Couleur de Roy* or Kings Colour may also be very well made with Madder Red, and the Brown prepared from the several Parts of Walnut Tree, but instead of Madder, the Dyer of the Lesser or slighter Dyes may use *Orseille* for the first sort of Colours, and only for the Stuffs which don't exceed xx Pence the Ell; but for the Kings Colour, it must be Madder'd to a good Dye.

LXIII,

Red &
Brown.

From the mixture of Yellow and Brown, are produced all the mixtures of Phillamort, and Hair Colour, which are finer prepared with Soot, than the several Parts of Walnut-Tree, especially if the Soot be used at the Latter end of a Maddering that is mixt with Turmerick.

LXIV.

Yellow and
Grey.

No mixtures is made of Yellow with Black, *Spanish* Broom serving only to abate the Redness of some Grey Colours, and to encline others to the Green, as for instance
Wa-

Water Grey, Green Grey, Goose turd Green
and the like Colours,

LXV.

All Olive Colours from the Brownest to the brightest, are only Greens rebated, or corrected with Walnut-tree, Yellow Wood or Soot.

Green and
Olive Co-
lour.

LXVI,

Having shewed the manner of preparing Sage Grey, Wild Dove Grey, Slate Colour, Brown Bread Colour, *Tristamie*, *Coleur d'Alyse* or Claver Colour, Leaden Grey, *gris de Morou*, Brown Grey and Twilight Grey, with Woad, Cochineal or Madder, and the Parts of Walnut-Tree, and since the greatest Part of the Colours composed of three or four Simple Colours may be several ways very well prepared with several sorts of Drugs, The Dyers ought to be left to their liberty, to use and finish their Dyes according to their convenience and knowledge; But it ought to be strictly prohibited that the drugs of the slighter or lesser Dyes be used in the greater or good Dyes, and that no stuffs be Dyed with the lesser Dye, which ought to be Dyed with the greater and good Dye.

Compound
colour pro-
duced from 1
3 or 4 co-
lours

Observations on the fourth Part,

AS the former part treated of the practice of Dying Simple Colours, and heigh-
ning

ning the Dyes, so this informs us of the product of the mixtures of Simple Colours. § *xlvi.* from the mixture of Blew and Cherries Berries Dyes, arises a Purple, if the Blew ground be very light; also according to Masters, the Cochineal and Tartar mixed with Violet will produce the same effect. § *xlvi.* and § *xlvi.* inform us that from the mixture of Blew and Crimson, all sorts of Greys are produced, if the Stuffs be a little Allomed, but we ought to know that Allom being an acid Salt, and Tartar a sort of Coagulated Vinegar, Crimson and all soft or nice Colours are hereby inclined toward a light bright Yellowish Red, wherefore the less of these ingredients is used, the blewer and darker will the Dye be the same may be said of Grey Purples and Violets, but it is to be observed that some add the Brown as a third in the mixture corrected with Turmeric, § *xlix.* we ought to be told that Tauny is sometimes Dyed with Black tho' upon blew it is best; but in the following receipts you have both Ways tho' the latter is the best.

To Dye Tawny.

Dye the Stuffs first Madder Red, then take the Fire Colour Dye, and put in one part Black therein, and let them heat again; then Work the Stuffs in it so long till it is light or dark according to your desire.

Another way to Dye Tawny.

L Et the Stuffs first be Dyed a light Blew for light Tawny, and dark Blew for deep Tawny, then being Allom'd cool'd and clean'd they must be rinsed through Madder Suds, till they are light or dark as you would have them.

The Author in §. *lxiii.* directs to make Philemort and Hair Colours by mixing Yellow and Walnut-tree brown : Now the like or the same Colour is produced with Yellow and Black, aswell as by reheating a lighter Red Colour in Madder Suds, or in Brasil Wood, and tis also to be observed that in §. *lx.* 'tis hinted that the same Colour may be produced several Ways, tho' some are better, more lasting and beauteous than the other, and that the experienced Artist ought to determine which is best. Also in this §. he treats of the use of the remaining Suds as in §. *xl.* the Workman may use that to the hightening the same Colours, or throwing out others, or attempting new ones according to Discretion. To conclude our observations on this chapter, 'tis proper to hint that all mixtures of Dyes look better upon the Stuffs than in the Copper, and that a Colour is very much sett off by mixture with others. §. *lxii.* The Author hints, That stuffs not exceeding 20 *d.* the Ell, are Dyed in Madder Suds, in the Great Dyery, and then the Black Dyer tinges it with his Black mixture, which is clearly forbidden in §. *lxvi.*

PART V.

PART V.

The Division of the whole body of Dyers, into two parts, viz. those who Dye the greater, and those who Dye the lesser Dyes; with the Reasons of this Division : The Colours and Stuffs which shou'd be lawful for such to Dye, their Apprentisage, Service with Masters, and Master pieces which every one ought to be obliged to produce.

LXVII.

The Art ought to be divided into two parts. 'Tis so necessary to divide the Art of Dying into two parts viz. the great or good Dye, and the lesser and slight, and to establish a Law that the Dyers of the great Dye, should not have it in their power to use or keep in their Houses, *Indian Wood* or *Orseile*, nor to finish the Blacks they begin, any more than the Dyers of lesser Dyes should be permitted to Gall or Black them without a ground of Woad alone, or Woad and Madder; or having liberty to use *Indian Wood* and *Orseile* for the diminishing all sorts of blacks, and for grey's, and Walnut browns, in Stuffs not exceeding 20 pence the Ell, and those design'd for linings not exceeding 30 pence the Ell, should be allowed to use them in of Stuffs higher price; that the Omission of such adirision would render it impossible to ar-

The Dyers of the greater Dye ought to begin all and blacks the lesser Dyers finish them.

arrive at the perfection of Dying, or to have the greatest part of the Colours without falsification, either by the want of the necessary ground or the use of *Orseile* or *Indian Wood* in stuffes and in Dyès, wherein these Colours can bastardise the Dye. It being not sufficient only to forbid bastard Dyes, but to retrench the Dyers from having so much as the Power or opportunity to bastardise them.

LXIII.

'Tis impossible to give the last perfection to black Dyes, without *Indian Wood*, especially in Wools for mixture, or render the price of Dying slight stuffs and coarse Wools, reasonable, without using it in the the room of Woad, Madder or Cochineal grounds; nor can the slighter stuffs afford even *Indian* and *Orseile* in Grey's and Walnut Colours, so that if the same Dyer should Dye both sorts, or the Art being parted it should be permitted for the Dyer of the great Dye, to finish what he had begun, 'tis not impossible but the Dyers might have an Opportunity to falsify the Blews with *Indian Wood* and *Orseile*, or to use them in grey's or Walnut tree Colours in Stuffs of value, which will by this means be deprived of their necessary good ground; or which is worse they will finish their blacks, as tis very easy for them to do, with Galls, Sumach, and Coperas, without ever giving

Necessity of
the Division
into two
parts

giving it the Woad, or Madder ground which is absolutely necessary to produce a good Dye.

LXIX.

To hinder
the ballard-
dizing of
colours.

There is no better way to hinder the falsification of Dyes, than after the Dyer of the good Dye hath given Stuffs the necessary ground of Woad, Madder and Cochineal, to oblige the Dyer of the lesser Dye to tinge them with the several parts of Walnut S. A. tree Gall them, tinge them to black and brown or grey, it being no less necessary to sort the colours according to the desired mixture, than to give the stuff a fine and beautiful Dye, neither of which can without great difficulty be done, if the Dye is begun, pursued and ended by one Dyer. We need not be so very strict in the Dyes which should pass from the Dyers of the greater to the Dyers of the lesser dye, the black only excepted, which is the most important, and wants to be sorted to no mixture, but is liable to the most frauds, which are most difficult to discover, for the falsification of other Colours being more visible may be easier discovered and prevented by leaden Marks and Seals &c. which ought strictly to be observed; of which more afterward.

LXX.

As this division will make more Master Dyers, so will it also encrease the Number of Inspecters ; for the Dyers of the lesser Dye, will be obliged to look after the Grounds of the greater Dyers, and the latter will also be obliged to see that the other finish the Blacks well after they have given them a good Ground ; and each being obliged to put his Lead or Mark, there is little likelihood that one will be willing to bear the Blame for the others Faults, or make themselves liable to answer for them : Nor can they have a good Understanding amongst so many visible Marks and inspectors which will expose their contraventions, besides the Care the Merchants will in all probability take ; they also having a Power of visiting which enables them to look after both sorts of Dyers.

One Dyer
to inspect
the other.

LXXI.

To obtain the necessary Advantage of this Division, and that every Dyer may know what Stuffs and Colours, and with what Drugs it shall be lawful for him to Dye, without encroaching upon one another, 'tis necessary that the great Dyers should dye all sort of spun Wool, or Wool to be spun, and all sorts of Woollen Stuffs of what goodness soever, of the following

Stuffs and
Colours
which ought
to be dyed
by the great
Dyers.

O

Colours,

lours, viz. all sorts of good Blews, Reds and Yellows, from the lightest to the deepest Dye, as well as all sorts of mixtures of Colours which proceed from two or three of these simple Colours, Blew, Red and Yellow, in the manner before specified.

LXXII.

The Dyers of the great Dye may also dye the Greys and Walnut Tree Dyes of all Stuffs exceeding twenty Pence the Ell, and Stuffs for Linings exceeding thirty pence the Ell, with the Woad, Madder or Cochineal ground, in Dyes where it is necessary, as wild Dove, Grey, Slate Colour, leaden Grey, brown Bread Colour, *Tristamie*, *Couleur d'Alyce*, Brown Grey and the like; and for the Justification of themselves, they ought to be obliged to leave at each end of the piece of Stuff a little Rose of every sort of Ground they have given it in the dying it; and if it be a Colour begun and ended without any precedent Ground, the Rose or mark ought to remain White.

LXXIII.

The Dyers of the great Dye may also Woad and Madder all Stuffs of high Prices, and only Woad the Stuffs of midling or lower Prices conformable to the CEXXVIII Article, and according to this
In-

Instruction, before the lesser Dyers should be permitted to Gall them or Dye them Black.

LXXIV.

The Dyers of the lesser Dye may Dye all sorts of low priced Wool, spun or to be spun, Stuffs not exceeding twenty pence the Ell, Linnen Stuffs not exceeding thirty pence the Ell; all sorts of Walnut Tree and Grey Dyes, as Deer Colour, Cinamon Colour, *Couleur d'Alyse*, brown Bread Colour, *Tristamie*, Musk and Cheef-cake Colours, Minim Brown or deep Tawny; White Grey, Pearl Grey, Mouse Grey, Beavor Grey, Breda Grey, Water Grey, Wild Dove Grey, Slate Colour, Lead Grey, Bear-skin Grey, *gris de Morou*, and other such like Colours, which may be begun and ended without any Ground, Red or rebate of Woad, Madder or Cochineal: And you may use for these instead of Woad, Madder or Cochineal, *Indian Wood* or Orseille, for those sorts of Dyes and for Stuffs, Wooll, &c. which exceed not the Price set in this Article, and without permitting them to leave any Rose mark.

Stuffs and Colours which ought to be Dyed by the lesser Dye.

LXXV.

The Dyers of the lesser Dye may also Dye low priced Wools and Stuffs, not exceeding twenty pence the Ell, in *Couleur de Syloce* ----- Peach Bloffom Colour, Flax Grey, Wine Colour, and all low mix-

tures which are prepared with Orseille alone, without medling with mixtures deeper than Velvet Colour, nor adding any other Ingredients to produce the mixture of Violet, Amarantus, Tawny, dry Rose, *Surbrun* or other the like, and withall they are not permitted to leave any Rose mark upon the Stuffs.

LXXVI.

Orseille, &
the Violet
for coarse
Stuffs.

And because bastard Cochineal may happen to be very dear, and the good Dyers may sometimes be without Flocks, and that the Rebate or little tincture of Woad, which the Dyers may give to Tawny, Amarantus, or dry Rose Colours, in the Copper, may not sufficiently encline to Red. To sort this mixture, 'tis necessary in this Case that the lesser Dyers should finish the Violet Dyes in coarse spun Wool, serving to the making of *Bergamo* or coarse Tapestries, or other low priced Stuffs, with Orseille, after the great Dyer hath given them a sufficient Ground of Woad; as well as he might give a Luster to the Tawnies, dry Rose and Amarantus Colours, after the great Dyer hath sufficiently Woaded and Madderred them; to testify which he should be obliged to leave his Rose Marks, which the lesser Dyer should be obliged to preserve, as well as the Marks of Woading in Violets, and in both Cases both are to add their own Mark, that the two Leads may be a satisfactory justification that the Stuffs

Stuffes have passed thro' both Dyes, but they ought to be forbid the use of Orseille in Wools for mixture of the same Colours, or in Stuffes exceeding twenty or thirty Pence the Ell as above, or in any other Colours of the Good Dye, but Violets, Tawnies, Amarantus, and other Colours of these two mixtures as in form above order'd.

LXXVII.

The Dyers of the lesser Dye may also Dye all sorts of browning or repassing thro' the Dye in mixt Grey, or coarse Woollen Manufactures, and they may herein use for browning Galls, Orseille and *Indian* Wood, but they must not augment the Dye therewith above one fourth part, and for their justification therein, they must leave a little Rose, of the same Colour the Stuffes were before, in the end of the piece; nor ought they to brown or deepen the said place, that if they have more augmented the Dye than necessary, it may be discovered by a little boiling of a Pattern taken from that Rose. The Dyers of the great Dye may also Dye browner, or repass thro' the great Dye but with the Baths of Cochineal and Madder alone, without any mixture of Dying Ingredients.

LXXVIII.

The Dyers of the lesser Dye may also Dye all sorts of Woollen Manufactures of

O 3

what

what fineness soever, after they have been Woaded and Madder'd, or Woaded alone, (conformable to the 178 Article) by the great Dyers, but they ought not to Gall or black any Woollen Manufactures, without either the Woad ground alone, or the Woad and Madder ground, nor without the Rose and other Marks as before specified, and shall afterwards be declared.

LXXIX.

The Dyers of the lesser Dye may also Dye and Re-dye all old Cloaths or worn Stuffs, Black of all sorts, Walnut Browns, Greys, Browns; tho' if the Stuffs are of Value and have not been much worn, they are obliged to give them the ground necessary to the good Dye; but for all other Colours they, as well as new Stuffs for Furniture and Houses, ought to be dyed by the great Dyers, with the same ground as other Stuffs, without their being obliged to put their Mark, if they alone Dye, the Colour it self being sufficient indication of its own Goodness. But in Black the great Dyer, after having given them the necessary ground, is obliged to set his Mark, and cause the lesser Dyer to finish them, and put his leaden Mark also just by the others, to the end that the owner of the Stuffs may keep the Marks, in order to have his Remedy against the great Dyer, to whom he intrusted his Stuff in Case it be ill dyed; and he against the lesser Dy-

Dyer, if the Fault be in the Black which he hath given it.

LXXX.

It is necessary to prohibit both sorts of Dyers to encroach one upon the other, nor is it proper for the great Dyers to keep the Drugs in their Houses which are used in the lesser Dyes, to Dye the lesser Dyes or Gall Stuffs, or finish the Blacks; any more than it is reasonable that the lesser Dyers should keep in their Houses the Drugs of the greater Dye, or Dye any Stuffs or Colours which belong to it, or finish the Blacks, unless they are Woaded, or Woaded and Madderred by the great Dyers. It ought here to be lawful for all Persons who have Stuffs under twenty pence the Ell, - old Cloaths or worn Stuffs, to send them to the great Dyer to have the Ground of the good Dye, but if they wou'd have them dyed Black or Re-dyed, they ought to be finish'd wholly by the lesser Dyer.

Both sorts of Dyers ought not to encroach upon one another.

LXXXI.

'Tis necessary to prohibit all Merchants from giving Stuffs exceeding twenty pence the Ell, or Lining Stuffs exceeding thirty pence the Ell, which they have bought White, to the lesser Dyers to be dyed; nor ought they to be suffered to send any Stuffs to be dyed Black without the necessary Grounds of Woad, or Woad and Mad-

Merchants ought to be forbidden sending their Goods to the lesser Dyers which ought to be Dyed by the greater.

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Madder ; they ought also to be forbidden to order their Manufactures to be dyed false Colours, or holding any Correspondence with or assisting the Dyers to that end, or to cause them to use any forbidden Drugs.

LXXXII.

'Tis necessary in Towns where there is but one Dyer, that he should dye the greater as well as the lesser dye if he knows how; still observing the Rules and Rose marks, and putting his leaden mark of the great Dye and to Stuffs and Colours of the great Dye, and his leaden mark of the lesser dye to Stuffs and Colours of the lesser, and the marks of both where they have participated of both; but where he is not skilful enough in his Art, he ought only to dye the lesser Dye and use that mark only.

LXXXIII.

Necessary
to have one
of each sort
of Dyers in
every Town.

'Tis necessary in Towns where there is only one of the greater Dyers, that a lesser Dyer shou'd also be placed there, that one may look after and be responsible for the other ; otherwise no perfection in the Art of great Dying is to be expected,

LXXXIV.

Apprenti-
ship & Ser-
vice necessary
to good
Dyers

The Art of great and good Dye being very difficult to learn, requires a long experience to arrive at any perfection in it ;
for

for which Reason 'tis necessary, that those who are design'd for Masters in it, should be at least four Years Apprentices to a Master of the great Dye; and that before he be admitted a Master himself, he produce his Indenture, and Witness that he hath not only serv'd his time out, but that he also at least work'd four more Years with him, or some other Master, after which he may demand leave to shew his Master-piece or Specimen of ability, which if it be well perform'd, he ought to be admitted a Master Dyer of the great Dye, but if it is not approv'd he ought to be sent back to learn, for so long time as is necessary to inform him in these things wherein he is deficient.

LXXXV.

Tho' the Art of using Woad is the most difficult and necessary Part of Dying, so before any one can be allow'd to Work as a Master, he ought to prepare the Madder-Red Dye, the Crimson Violet, the Green, Brown Tawny, or Woad and Madder Black, which are four Dyes, which 'tis absolutely necessary a Master of the great Dye should be perfect in, for which Reason those who would be Masters, ought (besides the Working at the Copper for Six Days) to be obliged to Dye a Piece of Stuff, Madder Red one Crimson Violet, one Green and one Woad or Madder'd Black Brown, after which they ought to be admitted Masters, Members of their Company, and may

Master
piece or
proof piece
of the good
Dye.

Masters
Daughter.

may in their turn expect to become Wardens, &c. of their Company, and their Widows and Children are to enjoy all the Honours and Privileges of the Art of great Dying. But the Sons of Masters of the great Dye, ought to be obliged to no more than two Years Apprentifage, and to be a Journeyman with their Father or some other Master, for two Years more, and to be obliged to perform, but two of the four Proof Pieces, and have their Option of those too, and to Work at the Copper but three Days: If a Journey-man Marrys a Masters Daughter, he ought in right of his Marriage, to enjoy the same Privileges as a Dyers Son, still taking it for granted that the Father of the Son or Daughter has himself performed his proof piece, and not otherwise.

LXXXVI.

Apprentil-
ages Service
and proof
pieces ne-
cessary to
the lesser
Dye.

There being no proof or Master piece established for the lesser Dyers, and it being necessary that those who would be admitted Masters, should be knowing and experienced in their Art, 'tis necessary for the future that they should serve an Apprentifage of four Years, continuing with a Master of the great and good or lesser Dye, and work journey work under a Master of the lesser Dye for three Years; after which being desirous to be admitted Master and Member of the Company, they ought to dye four pieces, viz. two of Cloath which they

they ought to dye Black, one after the great dyer has woaded it, and the other after he has Woaded and Madder'd it, and to Dye two pieces of Stuffles, not exceeding the price of twenty pence the Ell, one Beavor Grey, and the other brown Bread Colour, without any participation of the great Dye; which done, and having taken the necessary Oaths, he ought to be admitted Master and registred in the Company of lesser Dyers, and to enjoy all Privileges and Advantages of that Art, as ought also his Widow and Children. The Sons of Masters are obliged only to two Years Apprentisage, and to be Journey Men two Years with their Fathers or some other Masters, and they should be obliged to Dye but one piece Black and a flight piece of Stuff, and to have their Option; the Journey Men marrying their Master's Daughters to enjoy the same Advantage.

LXXXVII.

'Tis also necessary if Apprentices or Journey Men of the great or lesser Dye, are convicted of having robb'd their Masters, that they be for ever incapable of being admitted Master, and their Sentence to be written in the register of the Company to have recourse to upon all Occasions; and that the Apprentices or Journey Men do not Dye in their own or Master's Houses for their own Profit upon pain of exemplary Punishment.

Apprentices
or Journey
Mens punishment for
robbing
their Masters, or dyeing
for their
own Profit.

LXXXVIII.

LXXXVIII.

Master Dyer, alone permitted to Dye, except Hatters their Hats and Clothiers their Wools for mixture of Walnut tree Colours.

'Tis also necessary that all Persons whatsoever, besides Master Dyers, should strictly be forbidden the Dying or Re-dying all sorts of Woollen Manufactures whatsoever; except Hat makers which may dye their own Hats, and Clothiers their Wool for mixture, with the several parts of Walnut Tree only, being forbid to keep Galls, Coperas or other dying Ingredients in their Houses, or dye any other Wools for mixture, or any Stuffs at all.

P A R T. VI.

The Art of the manner of Dying Wools, Worstead, or Cruels for Tapistry and such like Work wrought on Canvas, the manner of reducing the Roven or other like Dyes to the great or lesser Dye, with a Description and discourse of the necessity of Lead Marks and Rose Marks, to hinder the degradation of the Stuffs and the falsification of Dyes.

LXXXIX.

Of the Dying of Wools for Tapistries, and Needle work wrought upon Canvas.

THE Wool, Cruels, &c. used in the finest luster'd Tapistries, and in needle Tapistries wrought on Canvas, ought to be dyed with the good Dye in the same manner as Stuffs; the perfection; of dying them,

them, consisting as well in the proper mixture of the Dyes, and preventing the felting and tangling of the Cruels, &c. as in the beauty and goodness of the Dyes, and it being very difficult, if not impossible, to sort the Dyes to their mixtures, or to hinder the felting and entangling the Wools if they pass through two several Dyers Hands.

XC.

It is therefore necessary that the Dyers of those sorts of Woolls, Cruels, Worstead, &c. should Dye both the greater and lesser Dye, but to the end that their mixtures of Colours may be the better sorted, they ought to be strictly forbidden the use of *Indian Wood* or *Orseille*, or the dying of any sorts of Manufactures, or any Wool, Cruel, &c. but what is design'd for these ends. The Wool, Worstead. &c. used in the making of *Bergamos* in the coarse Tapistry, being coarser, and the mixture of the Dye not being so difficult ought to be dyed by the greater and lesser Dyers, according to the fineness or make of the Worsteads, &c. used in the said *Bergamos*.

Dyers of Cruels for Tapestries, may dye the greater and lesser Dyes themselves.

XCI.

The Dyers of Wools, Worstead, &c. for the fine Tapistries, not having Colour enough to make a boiling in the Copper, may nevertheless Dye their Cruels, &c.

at

The Art of Dying.

at the greater or lesser Dyers, and sort their mixtures themselves, paying the Dyer as they can agree with him without his being responsible for the goodness of the Dye or sorting of the mixtures, which ought to be govern'd by the Tapistry Cruel Dyers, according to the Rules and Penalties which they are liable to.

XCII.

Tapistry
Dyers may
also dye
stuffs
where there
are no other
dyers.

The Tapistry Dyers may also (where there are no other Dyers) dye all sorts of Wool and Woollen Manufactures, observing the Rose and Lead Marks according to the Rules mention'd; but that they may not abuse this Liberty, the Commissaries and Judges of the Police ought to be enjoyned to enquire whether the Tapistry Dyer makes or dyes Stuffs enough to employ a dyer; and if there are a sufficient quantity of Masters or Journey Men fit to be Masters; and to order the most intelligent in the mixture of dyes for Cruel, Worstead; &c. for Tapistry to that Work, and the most knowing in the great or lesser dye to that work, according to the Capacities or number of Masters to be found, or which they please to appoint in these places.

XCIII.

The Corporation of Dyers at *Rovan* having been always divided into three different

rent functions, viz. in Woaders, Madders and Blackers or dyers of black, each of which is intirely ignorant of the others manner of Dying, it is to be fear'd if they were in a hurry obliged to submit to the present Rule, that not knowing how to prepare the dyes which might be demanded of them, the Art of Dying and Commerce might receive a very great damage thereby.

A Roan Art of Dying divided into Woaders, Madders and Blackers.

XCIV.

To avoid which Inconvenience, it would be necessary to let those which are already set up, continue in their old way, provided they observe the Rules of this Instruction, as well for the good Colours as the Rose or lead Marks, because the due observance thereof will prevent any inconveniences, the Madderer being obliged to answer for the Woaders Dye as the blacker is to answer for the dyes of both the other.

May be allowed in their old way.

XCV.

But to the end that this Custom may by degrees wear out, without any prejudice to the Art of good Dying, and that an Uniformity may be established throughout the Realm, a Master Woader and a Master Madderer, if they please, should so enter into Partnership in the same House, to Dye jointly the greater Dye, as prescribed in this Instruction; and after having so continued

Or reduced into the great or lesser Dye by Partnership

tinued the space of four Years, they should also be at Liberty to separate, and each of them to set up for the great Dye and to enjoy themselves, their Widows and Children, the Benefits and Advantages of Masters thereof, or return to the former profession at Pleasure, but should be obliged to declare before the Judges of Manufactures, which they choose.

XCVI.

Tho' if at present any Master Madderers are able to Woad, or Woaders able to Madder, it would not be in the least inconvenient to accelerate the uniformity by admitting them Masters of the greater Dye, and present them with all its Privilege and Advantages without their being obliged to enter into Partnerships; but they ought to be very well examined before the Judges of Manufactures, to the end that this insufficiency may occasion no prejudice to the Art of Dying or themselves: And care ought also to be taken that no Woader be admitted without admitting a Madderer, at the same time, to prevent the Woaders being more able to Madder and Cochineal, than the Madderers would be to Woad, and consequently drawing all their work from them. The same care ought to be taken of Widows.

XCVII.

XCVII.

For the Master Blackers of Roven, having versed themselves in the lesser Dye, 'twould be very easy for them to exercise it as prescribed in this Instruction, because there is very little difference betwixt the one and the other.

XCVIII.

If it is found necessary to permit any other Custom to continue as it is, for the good of the respective Towns where it is in use, or to comply with the weakness of the Master, and tend to the Advantage of the Provinces where it is, it ought as much as is possible to be squared according to the model of this instruction, in the great or lesser Dye, to bring the Dyers into the best way, by the softest methods.

XCLX.

To avoid the Mischiefs which may arise by an Understanding betwixt the greater and lesser Dyer, and betwixt the latter, and the Merchant, to fall the Price of Dying, by putting them to the lesser Dyer, without their being grounded by the greater Dyer; the lesser Dyer ought to be absolutely restrained from receiving any Stuffs above 20 Pence the Ell, or Lining Stuffs above Thirty Pence the Ell, or any

The lesser Dyer must not undertake to Dye Stuffs any or Colours belonging to the greater Dye.

P to

The Art of Dying.

to Dye Black, without the great Dyer hath given them the necessary Ground, or without his Rose and Lead Mark at one, or at both ends, if the Piece be double,

C.

Every Dyer
shou'd have
his Mark-

Mark of the
good Dye.

The Lead or Mark of every Dyer is so necessary to be put at the end of every Piece of Stuff, that it is the only way to detect any fraud in the Dye, and the guilty Person, in order to bring him to condign Punishment; But to the end that the Leaden Marks may be clearly distinguishable, and at first sight discover whether the Stuffs be Dyed by the greater or lesser Dyer, or by both; 'tis necessary that every greater Dyer shou'd have a little Anvil engraven round with the Name of the Place, and in the middle the Words *BON TEINT* i. e. good Dye, in Capital Letters and a Stamp with his Name Graven on it in Capitals also, so that striking the Lead with the Stamp upon the Anvil he may imprint it as above on both sides.

CI.

Mark of the
lesser Dye.

The lesser Dyer shou'd also have the same sort of Stamps and Anvils with this difference only, that in the Place of *BON TEINT*, good Dye, shou'd be engraven *PETIT TEINT*, lesser Dye, all in Capitals as the other.

CII.

CII.

Every Dyer ought to be obliged to put his Leaden Mark at one end of every Piece of Stuff which he Dyes; and if the Piece be double, at both ends: if the Piece be Dyed of both Dyes, each Dyer ought to put his Leaden Mark; the Mark of the lesser Dye being put next to but a little lower than the greater.

CIII.

Stuffs which have past the last Hand of the Dyer, either of the great or lesser Dye, alone or both: before the Merchant receive them; ought to pass the Views of the Court which shou'd be appointed for this end, and there Visited by the Drapers Officers in conjunction with the Sworn Dyer, who is to assist them; and if they are found to be well Dyed and Rose and Lead Marked, they should be Mark'd with the Lead Mark of the Court, Engraven with the word *TEINTURE*, i. e. Dying; with the Name of the Town, the last Lead being necessary to approve and confirm the others.

Leaden
Mark of the
Court of In-
spection.

CIV.

If any Piece of ill Stuff be found Ill Dyed or wrong Rose or Lead Mark'd; not only the Stuff and Dyer shou'd be seized and

Stuffs Ill
Dyed or
wrong
marked
Seized in
the Court

fined, but the Possessor of it, whether the lesser Dyer, for finishing it without the necessary ground, or the Merchants for receiving it, or sending it to the Shearer or Callender without the Mark of the Court, nay even the Callender, ought to be fined for receiving it,

CV.

The Mark
must be put
after the
Dying.

And that the Marks may be the better known, they should not be put upon the Stuffs till after they have received the last Hand of each Dyer, first of the great Dyer for Black, when they are deliver'd to the lesser Dyer; and when the lesser Dyer hath finished them he is to deliver them to the Court to pass search, and be Marked; and if the Marks are not Sufficiently clear, they may be Stamp'd again to render them plainer.

CVI.

The Seized
Pieces
ought to be
marked or
Seal'd

And to prevent any Persons slipping another Piece in the Place of that, which is Seized, the Officers of the Drapery or Sworn Dyer, and others, as well Merchants as Dyers belonging to the Court, should be empowered to affix their Mark or Seal with Wax or Lead, and to draw up an Indictment immediately in order to lay it before the Judges of Manufactures, where for a more ample Verification, as well the mention'd Officers of the Draperie as the Sworn Dyers

Dyers, and the defendant ought to be present or duely summoned to give satisfaction to the Judges, that the piece is the same, and to Examine the boiling or Dye, whether it be duely prepared with the necessary Drugs.

CVII.

And to break all the Measures which shall be taken for the bastardizing of good Dyes, 'tis necessary to enjoyn all Dyers of the good Dye upon forfeiture of the Price of their Dye given to the Stuffs, to leave one or two little Rose Marks at each end of the piece, one of the Blew and the other of the Madder Red which they have given to the Stuffs? And the lesser Dyer should be obliged to leave another Rose mark in the middle, or at the other side of each end of the Rose, if there be but one to justify its Colour before it was Galled and Blacked.

Necessity
and sort of
little Roses
for all Dyes
of the great
er Dye.

CVIII.

The great Dyers ought to be obliged to do the same in all Dyes, which they finish themselves without the assistance of the lesser Dye, leaving little Roses or Rose Marks, viz, in Greens, one of the Yellow, and another of the Blew, in which they have Dyed it; in *Phillamorts* one of Yellow, and the other of Brown in Crimsons, one of the Blew, and the other of the Cochineal Red; in Tawnyes or Amarantes, one of Woad and

another of Madder, or the half Crimson Dyes, with which they have tinged it, and so of the rest.

CIX.

Rose Marks
the general
Marks of
good Dying.

As 'tis necessary to leave little Roses or Rose Marks of every Dye us'd, in all Stuffs which have received a Compound Dye, 'tis also necessary to leave a little White Rose in all simple Dyes, as Blew, Red, Yellow, as well as in Browns and Greys in Stuffs exceeding xx. Pence the Ell, and Lining Stuffs exceeding xxx. Pence the Ell; because these Stuffs ought, besides the Leaden Mark of the Dyer, to have the little Rose or Rose Marks which should be the general Mark of good Dying, whether it hath been Dyed by one or both Dyers according to the difference of the Mysteries of great or lesser Dying.

CX.

Stuffs without
Roses a
Mark of the
lesser Dye.

As the little Roses at one or both ends of the Stuffs, ought to be the general Marks of good or great Dying, the want of them in a Dyed Stuff ought to be an infallible Sign of the lesser Dye; wherefore it is necessary strictly to forbid all Dyers of the lesser Dye, to leave any Rose Marks in their Greys Walnut-tree Dyes, in low Prized Stuffs, nor in any Stuffs or Colours which they begin, and finish without participation of the good Dye, except in their
Brown-

Browning alone to justifie what Colour the Stuff was before, and the augmentation of Dye they have given it, to the end that the Publick may not be cheated, and may be inform'd, by the sole inspection of the Marks and Roses, of the difference betwixt the great and lesser Dye.

CXI.

The Dyers of the lesser Dye ought nevertheless to be enjoyn'd to preserve the Rose Marks which the great Dyers shall leave upon Stuffs, in the same Colours, in their participation, of both the Dyes, and leave another in the Colour the Stuff was before it was Galled, Black'd, or *Orseil'd*, as is before Specified in this instruction; to the end that the Publick may know by the Roses and the two Marks, the Colours which the two Dyes have given it.

The lesser Dyer, ought to preserve the Marks of the greater Dye.

CXII.

But as there be some Merchants or Dyers who may be Ignorant, or at least pretend to be so, of the grounds of Woad matter or Cochineal necessary to a good Dye, and by this means find an excuse for retrenching a Part of the Dye, 'tis necessary that besides 16 Patterns of Colours mentioned in the Fourth Article of the Rule, others should be also Dyed, which shou'd serve as Patterns for all sorts of grounds, the one half whereof to remain in the Court of Draper, and the

Patterns ought to be kept in the Halls or Courts.

other in the Court of the Dyers of the good Dye, as well to have recourse to in the search, whether the grounds given be conformable to these Patterns, as to compare them with the Rose Marks, or that they may be enabled to lend a Pattern to all the Dyers, to regulate themselves in the same ground, or to put into the boiling together with the Patterns of the ground, which you wou'd justify, or which you would examine the falshood of.

Here the German Author makes his Annotations on the Fifth and Sixth Books, but they consisting only of repetitions of the Law of Dying abovementioned, and fearing that the English Reader may be tired, I rather chose to omit them, than trespass farther upon his Patience.

PART VII.

Drugs which may be used in all sorts of Dyes, as well by the greater as lesser Dyers; and what ought to be forbidden, with the necessity of Journals and searching the Dye Houses.

CXIII,

TO the end that no Person may be Ignorant of the Drugs which are allowed, and which are forbidden particularly in the

The Art of Dying.

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the greater or lesser Dye, or in common to both, they ought to be inform'd,

CXIV.

That the Drugs which in themselves afford no Colour but are used to dispose the Stuffs to attract the Colour of the Dying ingredients, or to render the Colour more Beautiful and certain, ought all to be allowed to the Dyer of the great Dye only, because the use of them cannot be injurious to Colours of the great Dye, but in the lesser Dye they have a clean contrary effect and serve only to spoil the Dye.

Non-Dying
ingredients
for the good
Dye.

CXV.

As Dyers of the great Dye may severally use different Non-Dying ingredients to produce the same effect, one choosing one way and another a different; so they ought to be allowed to keep in their Houses all materials of this Nature useful in Dying, and to use them which way they think necessary.

CXVI.

Non-dying Drugs in the good Dye, are, Allom, Tartar, Arsenic, Realgar or the Arsenic the Gold-smiths use, Salt-peter, Nitre, Sal-Gemma, Sal-Armoniac, Common Salt, Mineral Salt, Salt or Christal of Tartar, Agaric, Spirit of Wine, Urine, Tin, Bran, Pease

Non-Dying
Drugs of
the good
Dye.

Pease and Wheat flower, Starch, Lime, common Ashes, Pot-Ashes and Tartar Ashes.

CXVII.

Dying ingredients of the good Dye.

The Dying Drugs which ought to be used by great Dyers only, are *Auragceis* & *Albigois* Woad, slight Woad, Indigo, Cochineal, *Mesleque* & *Pesqualle* or the right best sort for high prized Stuffs, and Wild or Bastard Cochineal for slight Stuffs, and Wools for mixtures, Madder, *Bourre* or Goats Hair, Turmerick, *Spanish* Broom, *Sarrette*, *Genistrolle* and Soot, for Phillamorts, Hair Colours and Olives only.

CXVIII.

Ought to be forbidden in the lesser Dye.

The Lesser Dyers ought to be restrained from keeping in their Houses, Shops, or Ware-houses, any of the said Ingredients, and not permitted to use any of them. *Spanish* Brown only excepted in the softning of Blacks, and the rebates of Greys.

CXIX.

Ingredients common to both Dyes.

The Drugs which ought to be common to the Dyers of the greater and lesser Dyes, are those which afford very little Colour, or else tinge Brown as the Root, Bark, Leaves of the Walnut-tree, and the Nutshells; and *Garouille*, Galls, Sumach, Rodoul and Coperas: but the great Dyers ought to be allowed but very small quantities

ties of the latter four Ingredients, and only as much as may be necessary for a light Browning, which it is allowable for them to give to Dyes, in which 'tis difficult to fort their mixtures without an Allowance to diminish their necessary Ground which ought always to be as strong as their Patterns.

CXX.

Besides the Ingredients allowed in common to both Dyes, the lesser Dyers may have and use in the lesser Dye, Orseille, *Indian Wood* and *Verdigrease*, according to this Instruction; but these ought absolutely to be forbidden the great Dyers, to use or keep them in their Houses, Shops or Warehouses.

Ingredients
of the lesser
Dye.

CXXI.

The Drugs which ought to be absolutely forbidden, to both sorts of Dyers as well of the greater, as lesser Dye, are *Brasil Wood*, *Rocourt*, *Bastard Saffron*, *Turnsole*, *Anchusa* or *Gromel*, filings of Iron or Copper, Cutlers and other Grinders dust, *Rodoul* and *Sumach*, which have been used in the Dying Turkey or other Leathers, because all these Bastardize the Colour, harden the Wools and spoil the Stuff, *Fustel*, *Yellow-wood*, *Trentenel*, *Malherbe*, and *Alder Bark* ought to be prohibited, except in those Places where *Spanish Broom*, *Sarette*, *Genestrolle*, and the several Parts of *Walnut-tree*, *Sumach*,

Drugs forbidden in all
sorts of
Wood and
Stuffs.

mach, *Fovic*, *Rodoul*, are us'd; but in the other Places the use of them in Dying, ought to be entirely forbidden.

CXXII.

Dyers Books
ought to be
well kept.

If the Dyers Books be well kept, and a faithful account be kept, as well of what Drugs they buy, as the Goods they Dye daily, and what Goods they send to the lesser Dyers, and what they deliver to the Merchants, or the Person who is to deliver them into the Hands of the Court, 'twould occasion two great conveniences, for which Reason, the said Books ought to be methodized and paragraph'd by the Judges of Manufactures.

CXXIII.

The first advantage which would accrue by the well keeping of the Dyers Books, is that the great Dyers Books would square with the lesser Dyers Books, and both with the Hall Register of every Town. Which would prevent all good understanding, betwixt the Merchant and the Dyer in the Trade of Bastard Dying, and the former's receiving his Goods without the Hall Seal, or Verification, and prevent all the Dyers Measures for the use of false Drugs, or above Six Pound of Indigo to every Bale of Woad and one Pound. to every Hundred weight of the slihter Woad.

CXXIV.

CXXIV.

And in the second Place it would effectually remove all cause of dispute, or Law Suit betwixt the Merchants and the Dyers, occasion'd by fraud or accounts Ill kept on either side; or when by the negligence or dishonesty of the Servants, Factors and others, any Goods are lost or spoiled, the true and just right of either side would clearly appear by this method.

CXXV.

Besides these Precautions 'tis also necessary, that the Officers of the Draperie and the Sworn good Dyers, accompanied with some Merchants or Dyers of the Inquest, should every Week or at least every Fortnight, search the Dye Houses of both sorts of Dyers, to see if their Drugs be good, and their Stuffs well Dyed, whether they have given them the due Ground, and finishing necessary to the perfection of the Dye, and if their Books are well kept as above specified.

The Dye-houses ought to be searched

CXXVI.

'Tis also necessary that the Inquest, should keep a Register in due form, and enter therein the Number of Coppers of both sorts of Woad, which every Dyer boils every Week, and the quantities of both

Sworn Dyers Register.

both sorts of Woad which he puts into every Copper, how many times he reheats them, and the quantity of Indigo which he uses in the good Copper, or in the reheating, that if any thing be committed irregular, they may Secure and Indict the Persons before the Judges of Manufactures.

PART VIII.

Reasons why some Drugs ought to be allowed, and others Prohibited, and why some ought to be Prohibited in some Dyes, and allowed in others, with other Reasons offered in Answer to the objections, which may be made against this Instruction.

CXXVII.

Non-colour-
ing Drugs
permitted
to great
Dyers.

THE use of all Non-Colouring Drugs, ought to be allowed to the greater Dyers, because they only serve to dispose Stuff, to receive the Dye, and to render it more lasting and Beautiful,

CXXVIII.

There are three sorts of Non-dying ingredients, which Beautify the Dye, and a little alter the strength of it. As *Cendre Gravelee*, or Tartar Ashes, which a little slackens the Madder Dye, enclining it more to Red in the Copper. Urin
which

which brightens the Dye; and Aquafortis, which easily slackens the Luster of Fire or Nacarar, in Cochineal, by several little Spots, which it easily Imprints. These Drugs ought to be allowed, that we may not be deprived of those two fine Colours, which cannot be made so Beautiful and bright without them.

Chermes
Berries and
Chermes
paste.

CXXIX.

The two sorts of Woad, Chermes Berries, Chermes Paste Cochineal, *Mesque, Tesqualle Campeffiane & Sylvestre*, Hair or Flocks, *Sarvette*, and *Genestrolle* ought all to be permitted to Dyers of the great and good Dye, because they all contribute to the preparing of good Dye.

Woad, Co-
chineal
Madder &c.
ought to be
allowed to
Dyers of the
good Dye.

CXXX.

Tho' Turmerick does not afford so lasting a Yellow, as Spanish Broom; yet it ought to be allowed to the greater Dyers, because there is no other Ingredient more proper to give a Nacarator Yellow, Orange lustre, to Reds Dyed, with Chermes Berries as the *French* Scarlate, as well as with Cochineal, as Crimson, or Madder, as the Madder Nacarar or Orange. Aqua-fortis will also doe the same thing, but it succeeds much the best in *Dutch* Scarlate.

Why Tur-
merick is
permitted.

CXXXI.

CXXXI.

Indigo why
and how
permitted.

Indigo ought also to be allowed because tho' it does not yield a good Colour if used alone, yet it produces a good Dye if used with Woad, as directed in Article 8, 9, 10. and 11. of this Instruction; and farther because at present we are not over stored with Woad, and Indigo being one of the Chains which fastens the *Indian Trade* to *France*, it ought to be used.

CXXXII.

Soot yeilding a Brown Dye of a nasty smell might be forbidden, because of the ill scent, if it was not a prevention against the Worms, and more proper for Phillemorts and Ox Colour, than Walnut-tree; when it is used in Madderage with Turmerick.

CXXXIII,

The severall
parts of the
Walnut-
tree Galls
Sumach Fo-
vic Rodoue
and Cope-
ras why
permitted.

The Root, Bark, and Leaves of Walnut-tree and the Nut shels, Galls, Sumach, *Fovic*,--*Rodoul*, and Coperas, are all very good ingredients. Which serve either to prepare Stuffs or Dye them, and ought to be allowed in Common to both sorts of Dyers, because both are allowed to Dye Grey, and Walnut-tree-Dyes, the great Dyers, in Stuffs exceeding 20 pence the Ell, and Lining Stuffs exceeding half a Crown the Ell; and the lesser Dyers, in those under those

those Prices, wherefore 'tis necessary to permit them in common to both Dyers, to be used according to the 119 Article of this Instruction, because they cannot otherwise sort or mix their Colours.

CXXXIV.

Garouille — producing a Colour proper for Wools, for mixture in Rat Colour the Wool being cleans'd in the fulling Mill, 'tis proper to use this Drug, because it will serve to produce the Rat Greys in coarse as well as fine Wools; it ought to be allowed in common to the greater or lesser Dyers, in the Wools for mixtures which they are respectively permitted to Dye.

Garouille.

CXXXV.

Tho' *Indian Wood* used with Allom and Tartar, produces a false Colour, yet it yields a good and lasting Dye if used with Galls, Sumach, Rodoue, Fovic, Coperas and Verdigrease; in Blacks where it is very good to soften the Blacks and Stuffs, and makes both wear better; 'tis proper to be used in Grey and Walnut-tree Dyes of Stuffs not exceeding 20 Pence the Ell, and Linnen Stuffs not exceeding half a Crown the Ell, to render the price of Dying as easy as possible; and because the great Dyers may misuse it in the falsification of Blew, or in Substituting it in the place of Woad, 'tis only to be permitted to the lesser Dyers, who are

Bois d'Inde — why permitted in some Dyes, and forbidden in others.

Q-

not

not allowed to Dye with Allom and Tartar Afhes, by which precautions the ill use thereof will be prevented.

CXXXVI.

Orseille
why and
how allow'd

Orseille producing a beautiful, tho' no lasting Dye, ought therefore to be allowed to the lesser Dyers in the lighter Colours of its mixture, which are difficult to be imitated, and also to give a Lustre to Walnut-tree Dyes ; because the lesser Dyers are not allowed to Dye high priced Stuffs, and the low priced Goods cannot go to the price of a strong Dye.

CXXXVII.

▲lder bark.

Alder bark hath nothing ill in it, and the sole apprehension that it contributes to the using of Smiths Dust in the Dye, hath occasioned its prohibition, but the Advantage which occurs by the diminution of the price of Black, Grey and Walnut-tree Dyes in low priced Stuffs where it is very proper, prevails over this fear, so that after forbidding the Smiths Dust, it entirely vanishes ; and it is proper to allow Alder bark to the lesser Dyers only, and not to the greater Dyers, how necessary soever it may be, which ought to be examin'd upon the Spot, and thus far it ought to be forbidden.

CXXXVIII.

CXXXVIII.

Verdigrease which serves to tinge the beautiful Colours of Celadon Green and Brimstone Colour, and being useful used in small quantities and half hot with *Indian Wood Blacks*, ought not to be forbidden, because it is not only advantagious and cannot be injurious (if used according to this Instruction) to the goodness or beauty of Colours, but because it affords its Dye without the preparation of Allom and Tartar, and is proper in Blacks; it ought to be allowed to the lesser Dyers, whose Business it is to dye Black.

CXXXIX.

Trentanel ——— and *Malherb* being a little injurious to the sight of those who use it, and their Dyes not being so certain or lasting as that of *Spanish Broom Sarrette* ——— and *Gonistrolle*, nor the Colour of *Fustel* so lasting as that of *Spanish Broom* or *Walnut-tree*, yet it serving to the heightning *Nacarat de Bourre* or pale Orange which *Yellow Wood* also doth, are the Reasons why these four Ingredients are prohibited at present in the Dying of Wool, except the *Yellow Wood* which is allowed in Black.

CXL.

Smiths Dust
filing of Iron
or Copper
forbidden.

Smiths or Cutlers Dust, and filings of Iron or Copper which sensibly spoil and harden the Stuffs, and stick in the Threads and eat into them as well as the Worm, are three Ingredients which are wholly improper in Dying Wool, and ought to be absolutely forbidden as well as Turnsole.

CXLI.

Gromel.

Gromel which affords a red brown inclining to Tawny, whose Dye being neither so fine, so good or so cheap as Madder, and being besides a Foreign Drug, ought to be absolutely forbidden as an unprofitable Ingredient.

CXLI.

Rocourt.

The Rocourt Dye being dearer, and not so fine and lasting as that of Flocks; ought to be absolutely Prohibited, as well because 'tis a Forreign Drug, as, because it fly fades in Wool.

CXLI.

Bastard or
Wild Saffron.

Bastard Saffron being neither so good nor profitable in dying of Wools, which receive the Dye of the Flocks much better, ought also to be absolutely forbidden, that the Dyers may not amuse themselves by

by drawing a false Colour from a very dear Drug.

CXLIV.

Brasil ought to be intirely forbidden as Brasil forbidden. well because it is a Bastard Dye and a Forreign Drug, which draws a great deal of Money out of our Country, as because it cannot be allowed to the greater Dyers, without breaking all the Precautions taken by this Instruction, and opening a way to Bastard Dyes; Nor can it be allowed to the lesser Dyers, without the same inconvenience, and without allowing them at the same time Allom and Tartar, without which they cannot use it, and it will also give them an opportunity of Dying the Bastard Colour of *Indian Wood*; For all which Reasons I think necessary to repeat it, that Brasil Wood ought to be absolutely forbidden, to both sorts of Dyers.

CXLV.

Orseille is allowed rather than Brasil, as well because it is used without Allom or Tartar, as because it is a Drug which Why Orseille rather permitted than Brasil. Grow's, and is prepared in *France*, and the cheif Colours of its mixtures are very difficult to supply otherwise; but Brasil may be easily supplied with Madder, Flocks or Cochineal: besides, the Madder Red, which is a very good Colour, is not much dearer than that of Brasil which is a Bastard Dye.

Q 3

CXLVI.

CXLVI.

All Drugs what soever which are not expressly allowed, ought to be supposed forbidden, tho' the Reason of their prohibition be not here express'd.

CXLVII.

Blew, Red
and Yellow,
belong to
the great
Dyers,

Of the five simple Colours, Blew, Red and Yellow ought to be left to the greater Dyers, to Dye only without any participation of the lesser Dye, as well because they have a great deal of reciprocal relation, and require a large share of Knowledge and Experience to succeed in them, as because of all the Colours produced from their mixture the possibility of a Bastard one should be prevented; one good Colour grafted on another, tho' it yield a darker, yet it is a more lasting one.

CXLVIII.

The Brown
and Black to
be Dyed
differently
by both
Dyers.

The other two simple Colours, viz. Brown and Black ought to be left differently to both sorts of Dyers. The Black having before received the Woad or Woad and Madder Grounds necessary to the good Dye of the great Dyer, and afterwards galled & blackned by the lesser Dye to deprive the great Dyers of an opportunity of Dying Blacks without the Woad or Madder Grounds, and falsifying the Blew, which they might easily do if they were

were allowed to finish the Blacks and to use *Indian Wood*.

CXLIX.

And because fine Wools, and high priced Stuffs, as well as course Wools and low priced Stuffs, are dyed Brown and Grey, which are mixtures of black, and that several of these Greys and Browns require Woad, Madder or Cochineal, to produce the good Dye, and course Wool and slight Stuffs cannot afford the price of those Drugs: To remedy which by lowering the price of Dying, *Indian Wood* and Orseille ——— ought to be used: and for fear the greater Dyers should misuse them, 'tis necessary to allow the Brown and Greys to be differently Dyed by both Dyers, viz. the great Dyers to Dye the high priced Stuffs with the ground or finishing of Woad, Madder or Cochineal in Colours where it is necessary, and the lesser Dyers the meaner Stuffs with *Indian Wood* and Orseille, to the end that both may sort their Colours, and that the good Dye may not have leave to use *Indian Wood* or Orseille in Greys or Walnut-tree Dyes in fine Stuffs, nor to the Bastardizing the Blew.

CL.

General
Reasons.

After having given the Reasons why some Drugs are allowed and others forbidden, and why Dying is divided into the great and lesser Dye, it being yet necessary to answer some Memoires, and these Answers serving to illustrate and remove all difficulties from things of this Nature, it is thought good to include them in this Instruction to the end that every Person may inform himself thereof.

CLI.

Against the
Brasil Dye
in Wools
for mixture.

Some Dyers are of Opinion that the Brasil Wood Dye mixt with Walnut-tree yields a lasting Colour in Wool for mixture; but experience demonstrates the contrary and the use of Madder being more efficacious, the desire of using it can only be attributed to an ill Custom and disgust against well doing, for if any Colour lasts in the mixture of Stuffs, 'tis rather the effect of Walnut or Galls than Brasil, for the violet Colour which it gives to Stuffs, intirely vanishes, especially if they are used in Breeches betwixt the Thighs, or the Stuffs in wearing are exposed to the Sun or ill Weather, it quite changes to a Yellowish or brown Colour very different from the rest; and *Indian Wood* it self, tho' strengthned with Verdigrase, Galls and Coperas in blacks, being used in too great quantity either in Grey or Walnut-

nut-tree Dyes, of Wools for mixture or Stuffs or in brownings, is very apt to spot with the least drop of Urine, or any Acid or corroding Liquor : wherefore Woad, Madder and Cochineal, are better used in Wools or Stuffs of value in Colours where the too great quantity of the other, and the small quantity of Galls or Coperas, which may be used, produces this ill Effect.

CLII.

There are others who imagine because Fustel ——— and Yellow Wood are proper in Gold Colour, Shammy or Buff Colour and necessary in Olives and Phillamorts that they ought to be allowed in these Dyes, that indeed they may be furnished with an Opportunity of using them in the Bastardizing and strengthening of *Nacarat* Flocks, pale Oranges, or other important Colours which they can alter : but supposing that incorporated with *Spanish* Broom, it composes a better, and more lasting Yellow, Olive and Phillamort Dyes, than *Spanish* Broom alone : For who is ignorant that knows but the least principles of Dying, that *Spanish* Broom cannot produce a Phillamort or Olive Colour, if there be not Brow mixt with Yellow in the first, and above that with the Blew and Yellow for the first, and Brown Blew and Yellow for the second, and that the Brown for these two Colours can more easily be tinged with Sut and Walnut-tree :
But

Fustel and
Yellow
Wood.

But 'tis with this pretext that they Colour their earnest desire to have Fustel ——— allowed them, that they may really use it in the falsification of Dyes wherein it is forbid. Yellow Wood being nevertheless proper for Blacks, 'twill be necessary to allow it in places where it shall be found necessary.

CLIII.

Beaver
black
suspicious.

There are yet other Dyers whose Intention to act sily and closely renders them more dangerous, who to cloak their contravening designs, desire leave to prepare certain Dyes, as that they call Beaver-Black without being obliged to disclose what Drugs they use, nor the manner of preparing it. If their Drugs were good and allowed, they would not have occasion for any other than the general permission, but their Ingredient being forbidden we ought always to distrust their intention, till by a just examination of the Drugs and manner of preparing this Colour, we be able to judge of the good and advantage of this Colour, and of the permission which they desire.

CLIV.

But that no discoverer of any secret in this Art may be deprived of the advantage of his Invention, nor Labour under any inconveniences by this Examination, nor loose
any

any other profit by it; if it be found good and advantageous, it will be necessary to grant the Inventer, or he that brings it into *France*, a Patent that no Person besides himself should exercise it in that Province: where he thinks fit to settle, and that he should be empowered to sell or give leave to others, to exercise it in all the other Counties of *France*.

Profit the Inventer may reap by his discovery.

CLV.

The same may be effectually extended to Forreigners to oblige them by this Privilege to discover their secret and reap the advantage of it in *France*; But care ought always to be taken that a good secret never remain in the hands of one Person alone, least it should be lost by his leaving the Kingdom or his Death, which may be easily remedied by allowing them the profit of teaching it in other Provinces: But if the secret is known to any Frenchman he ought always to be preferred to Strangers, because he is likely to stay with the money he gets by it in the Realm.

The same respect to be had to Strangers.

The secret ought not to remain in any one Mans breast.

French preferred to Strangers.

CLV.

As 'tis of great importance to search in Provinces, for all the Herbs, Drugs, Minerals, or Roots which may contribute to good Dying; 'tis also necessary that they should not be permitted, before a strict examination whether their Colour be good

The Rules ought to be squared to the Commodities of the Province.

good and profitable, and as there are Provinces which want one thing and abound in another which produces the same effect it should be committed to the prudence of the Judges of Manufactures, that are upon the spot, who ought to give their resolution in writing upon the petition presented; and as delays may be very pernicious, if the ingredient be found to be good, the use of it ought to be allowed during the Kings pleasure, or till further order only.

CLVII.

To prevent
impertinent
petitions.

But to prevent any impertinent petitions which may be presented upon this occasion, or any other person's serving himself of the allowance of any Drug in one Colour, where it is proper, to use it in another, where it perniciously either falsifies the Dye or damages the Stuffles, 'Tis necessary to impose a Penalty upon those who present these petitions; that they may take care to examine them strictly before they offer them.

CLVIII.

Tho' 'tis certain that a Black Dye in which *Indian-wood* is used as specified in this instruction, may be very easily done and that it is warmer, finer, softer, and wears better than without it; yet it doth not very naturally follow that we should therefore deprive

prive the Stuffles of the necessary ground of Woad, (as some Dyers will very improperly do in weak and slight Stuffles) as well because to render the Black certain and lasting, requires a double quantity of other ingredients which renders it dearer than Woad, (which will oblige the Dyers to compass their ends to retrench the greatest part of the Dye, and thereby render the Colour doubly ill:) as because the Black Dyes where *Indian-Woad* is used in too great a quantity, without being fortified by a Woad or Woad and Madder ground, will spot and change reddish in those places where Urine or any sharp liquor happens to come. But as this secret is discover'd in all Articles concerning Blacks in this instruction, it will be in vain to the Dyers to pretend to conceal it, to furnish themselves with a pretext to Dye Black without Woad and Madder Grounds, since that Colour will not be sufficient to hide their Contravention as will appear more clearly in the 10th part.

Observations on Part Seventh and Eighth.

THESE two Chapters treating of the same subject, *viz.* the allowance and prohibition of Dying Ingredients, with this difference only that one of them treats of the causes why they are allowed or forbidden, 'twill not be improper to join the Observations together. §. 116. The Author speaks of non Dying Ingredients which are
either

either added to the Dye or make the Stuffs supple and stronger or cleanse them (amongst the first is Allom, and the last Tartar) or they heighten the Dye as the several sorts of the Salts with or without alteration, as Pot-Ashes, Saltpeter, Common Salt, Cristal or Mineral Salt, Sal Armoniac, Lime, Ashes, and without alteration, as Liquors, viz. Spirit of Wine, Urine &c. Of the use of the first, see notes on §. 18. And concerning Urine the Author §. 128 tells us that it brightens the Madder Dyes, but it hath sometimes a quite contrary effect, especially if it be stale, and the Volatil Salt a little more fermented for it penetrates into the dying Liquors and always renders the Colour thick and deeper, as may be observed in the pale and deeper Madder Colours. The mention'd flowers of Wheat and Pease as well as Starch and Bran serve to slacken and temper the hardness of the Waters. §, 121. The mentioned Brasil Wood as also Wild Saffron is much used in *Germany*, but the Colour of the latter is somewhat more durable than the first, which is no lasting Colour. As for Madder if we would consider our own Interest we might produce enough of it in *Germany* to ballance the *Hollanders* Ships who trade with us if we pleased. Iron filings render the Stuff harsh and burn the Dye. As to the prohibition of Alder bark the ingredient is not so dangerous, but that if well prepared it may very well be allowed; but of that more in the notes on the next part.

P A R T V.

The Drugs necessary to and manner of Dying good Blacks, with the necessary Wood and Madder grounds, suitable to the goodness and duration of the Stuffs.

CLIX.

THe Black Dye in valuable and midling Stuffles is most important, as well because this Colour is liable to the most frauds, the discovery whereof is very difficult, as because 'tis a Dye which is used in the finest Stuffles which are worn by people of the best quality; 'tis also necessary to take very good care that the Dyers Dye the best Black that they possibly can without sensibly injuring the Stuffles or excessively enhancing the price of the Dye.

Black the most important Colour in Stuffles.

CLX.

High prized Stufflesought all to be Madder'd for four reasons.

Why Stuffles of Value ought to be Madder'd.

CLXI.

First, because it renders the Dye the better, more finer and more serviceable.

CLXII.

CL XII.

Secondly, because dear Stuffles being made of the finest Wools, they being moiſter and more Oily will be apt to ſoil and more eaſily catch duſt, or the lint of Table Cloths Napkins and old linnen, if they are not well cleaned with Allom, Tartar, and Madder before they are Dyed Black:

CLXIII.

Thirdly, if the Black Dyes of fine Stuffs are not Madder'd, they require more Copperas ; an ingredient much more corroding than Allom.

CLXIV.

And fourthly, becauſe fine Black Stuffles which have been Madder'd, being dryer and better freed from their Oilyness, are more healthful in the wearing than if they had not.

CLXV.

Madder'd
Black the
beſt.

No body can deny that fine Stuffles being Madder'd are better, more beautiful and more wholeſom than if they had not ; but we may very well doubt of the wear and laſting of the Stuffles if we don't know;

CLXVI.

CLXVI.

That no Drugs are so sharp and Corrosive as Salts, and particularly Allom and Copperas, which by their extraordinary heat harden the Stuffs and render them less lasting, by drying up the Oleaginous humidity which renders them flexible and keeps the Hair of the Wool fast; but it doth not necessarily follow that the small quantity of Allom used in a Madder'd Black, corrected with a great deal of Tartar and suffer'd to boil but a very little while, can produce this ill effect; but on the contrary the drying the Superfluous Oily Moistness of the Wool and cleansing it with Tartar and Madder renders it more lasting, by hindering the dust from staying in it which eats the Thread of the Wool as much as the Mothe, and preventing the Lint of Table Cloaths, Napkins and old Linnen from sticking to it, and alway soiling it, which tho' it is a very great fault, yet a great many are ignorant both of the cause and remedy of it.

Sharp and
corroding
Drugs rot
and Dama-
ge the
Stuffs.

A little Al-
lom cannot
hurt fine
Stuffs.

CLXVII.

If Black Stuffs be said not to be lasting, 'tis as well those not Madder'd, as those which are; which may proceed from a fault in the Stuff, or in its preparation, or by the ignorance of the Dyer, in not using Allom, Tartar, Madder, according to the

This Black
Dye does
not injure
the Stuffs
with
respect to
their dura-
tion.

R

pre-

prescribed form or tinging the Black in the proper manner, and with the necessary Drugs.

CLXVIII.

Allom
serves to
dispose the
Stuffs to
take a more
lively Co-
lour.

Tho' there are few Dyers who know the quality or degree of humidity or dryness of the Drug which they use, nor why one Drug is more proper for one Colour than another, yet all the great Dyers either know or ought to know that Allom not only disposeth the Stuffs to receive the Dye, but gives it an agreeable vivacity, and that Tartar is used not only to correct the sharpness of the Allom, but to dispose the Stuff to receive the Dye. Where the lively luster which Madder adds to the Black Dye is not required, by using a very little Allom and a sufficient quantity of Tartar, and letting the Stuffs boil a little, the Sharpness of the Allom will be removed, as experience confirms.

CLXIX.

Woad and
Madder
in Black
Dyes cause
the more
sparing use
of Coperas.

Woad and Madder, are not only used to beautify the Blacks, and render them more lasting in fine Stuffs, but to prevent the excessive use of Coperas, which is necessary if they were Dyed from White immediately Black; so that to avoid an imaginary inconvenience we generally fall into a real one, the sharpness of the Coperas, which must be used in greater quantities in fine

fine Stuffs without they are Madder'd, being more to be feared than that of Al-lom, Tartar and Madder.

CLXX.

'Tis to no purpose that some alledge that the Red of Stuffs madder'd for Black, is more difficult to tinge Black, than the liveliness of Blew, and also requires more Coperas; for 'tis well known that this sort of Madding inclines but a very little or not at all to Red, and by using *Indian Wood* in the Black Dye, the Red is easily surmounted, nor need we boil the Stuffs long in Galls, nor make the Coperas bath very hot, because *Indian Wood*, which serves in this place instead of Galls, makes the Stuffs take the Black if the Bath be but moderately heated, which hinders the sharpness and softens the Stuffs in Black Dyes.

Madder Red as easy to Dye Black as Bright Blew.

And will take the Dye almost cold with *Indian Wood*.

CLXXI

Tho' fine Stuffs ought to be both Woaded and Madder'd, yet in fine unspun Wools the case is different because the Al-lom and Woad drying the hair of the Wool, render it inflexible to the Spinners Fingers, and prevent its keeping fast in the Fulling; but we ought to content our selves with Woading them alone, the Blew how deep so ever always cleansing and softning rather than hardning the hair of the Wool.

Wools for mixtures ought to be Woaded alone.

CLXXII.

Stuffs made
of midling
and Course
Wools
ought to be
Woaded
only.

As Stuffs to be Dyed Black made of fine Wool, ought to be Madder'd to dry and cleanse them; so Stuffs made of a midling course Wool, being of themselves dry enough, and often too dry, ought only to be well Woaded, the Woad preserving and augmenting the softness of the Stuffs, and rendering the Colour very good and lasting if properly used, and in sufficient quantity, according to the goodness and strength of the Stuffs. But the Blew either of the best Woad alone or mixt with the slighter Woad and Indigo, must be given according to the 8th, 9th, 10, and 11. Articles of this Instruction, otherwise the Dye will be bastardised, for which reason, 'tis above all of great importance to take care to have a perfect Black, whether it be Madder'd or Woaded only:

CLXXIII.

Before we can well fix the grounds of Woad alone, or of Woad and Madder, of all sorts of Stuffs to be Dyed Black, according to the fineness of the Wool and strength of the Stuff, we ought to be previously inform'd.

CLXXIV.

Ground for
Black suits
able to the
duration of
Stuffs.

First, that strong Rasches and double Serges which are made of good Wool, being

ing connected together as well by the texture of the Threads, as the conjunction of the hairs of the Wool which have not been broken by the Card or Fullers, Thistle ought to have a stronger ground than Stuffs of the same Wool combed, because they last much longer

CLXXV.

Secondly, That the Dye penetrating much easier the open, then the fast or close Stuffs, the last sort ought to have a stronger ground; that thereby the quick penetration of the Dye in the others may here be compensated by the strength.

CLXXVI.

Thirdly, Lining Stuffs being commonly more loose and open, and less exposed to the Sun and Rain, ought to have a less ground than those which are more exposed to wearing or the injuries of Weather, tho' made of the same Wool.

CLXXVII.

In the fourth place, That the Rasches of *Ghâlons, Amiens, Rheims, Chartres* and other slight Stuffs, not being half so lasting as those of *Nismes, Montauban, S. Gaudens* and other strong Rasches; they ought to have a less ground proportionable to

R 3

their

their duration, tho' they cost more and are often made of very fine Wool.

CLXXVIII.

Woad and
Madder
Grounds for
high Prized
Stuffs.

That we may duly and Advantageously Observe all that hath been said, we ought to be inform'd that all Cloths of an Ell, and Ell and three quarters, or an Ell and an half, whether English, *Spanish* or *Dutch*, or of *Sapte*, *Carcassonne*, *Elbeuf*, *Rouen*, *Sedan*, or other sorts of make, of the finess and breadth which exceeds the Price of 12 Livers the Ell, should be Woaded like an *Aldeguo* and Madder'd as the best sort.

CLXXIX.

The *Drap de Berry* or Cloaths of Berry, *Sigovia*, *Rouen*, *Dieppe*, *Fescan*, *Carcassonne* and *Sedan*, all sorts of fine Ratines, Serges of *Sigovia* and *Limestre*, double Serges and others such like Stuffs of what breadth or make soever, from 4 Livers 10 Sous to twelves Livres the Ell, shou'd be Woaded to a Perfick Blew (*Bleupers*) and a little less Madder'd than the others above, and for those under 4 Livers 10 Sols they ought to be Woaded to a Perfick Blew, and not Madder'd at all.

CLXXX.

Druggets of fine Wools called half fulled Druggets, narrow Ratines, *Cordelates* of

of *Avignon* and other Stuffs of the same Nature, of half Ell or a quarter of an Ell wide, exceeding the Price of three Livers the Ell, ought to be Woaded to a Perfick Blew and Madder'd in the same manner as the Serges and Ratines above mention'd; Having always respect to their Price and breadth.

CLXXXI.

Cloath Serges and Ratines of whatsoever breadth, make or finess, from 3 Livers to four Livres 10 Sous the Ell, ought to be Woaded to a Perfick Blew, and those of less Price to the *Blew de Roy*, Kings Blew, without being Madder'd.

Woad ground without Madder for Stuffs under 4 Livers 10 Sols the Ell.

CLXXXII.

London, Chalons and *Rheims* Serges, *Pol-bilaire Rasbes* and the * *Lords Rasb* of *Nismes* and *Usex*, fine *Rasbes* of *Alby*, *Castres* and *Montauban*, strong Cross *Lords Rasbes* of *St. Gaudens*, *Roman* Serges: *Lords Serge*, *Serge de Somere* a Narrow double Serge, *Flanders Barracans*, double *Burats* of *St Gaudens*, and other the like sorts of Stuffs of the same breadth of whatsoever make, not exceeding 2 Livers the Ell, ought to be Woaded as the Perfick Blew and not Madder'd.

* So called from Persons of Qualities wearing them.

A sort of coarse Grey Stuffs which the Fryers wear.

CLXXXIII.

The midling sort of Satines of *Beauvais*, *English* Frises; Bayes, Serges and Flannels; Serges of *Mouij*, *Merron*, *Aumalle*, *Creve cœur*; *Rashes* of *St. Loand*, *St. Gaudens*; *Lingettes* of *Cadu* and *Falaise*, *Camelot* or *Camblets* of *Amily*, *Arras* and *L' Isle*; Bayes of *Castres* and *Burguiere*, slight *Ratines* of *Sommere*, *Cadri*, *Daricane*; *Crapes* of *Castres*, and all other sorts of Narrow Stuffs, of what make soever, from 25 pence to 40 pence the Ell, ought to be Woaded as the Turkish Blew without being Madder'd.

Woad
ground for
slight Stuffs.

CLXXXIV.

Frises of *Amiens* and *Valentine* of $\frac{2}{3}$ of an Ell, broad Serges of *Chartres*, *Nogent* and of *Chartres* make, *Cordelates* of *Cre*, slight *Fripous* and *Cadis* of *Nismes*, Serge of *Aumalle* of two thirds breadth; *Tamies* of *Amiens*, *du Lude*, *de Rheims*, slight *Burats* of *St. Gaudens* and *D' Auvergne* *Rashes* not Crossed and *Cadis* of *St. Gaudens* and all other slight Stuffs, from 12 to 25 pence the Ell, ought at least to be Woaded to a Sky Colour.

CLXXXV.

The *Cadis* and *Fripous* *dupuy du Gevan-*
dan, slight *Cordelats* of *St. Genies*, *Burattes*
of *Auvergne*, Serges of *St. Flour*, and other
slight Stuffs, not exceeding 12 pence the
Ell

Ell, ought to be Woaded as the *Blew Meg-non* — which is but half the mixture of the Sky Colour; and the Reader ought to take Notice that all the mention'd prizes of the Stuffs are meant when they are yet white.

CLXXXVI.

All Wools for mixture ought to be Woaded with the same ground with the Stuffs, wherein they are to be used, without Maddering, that they may have a Dye futable to their Value. Woolen *Caps* ought to Woaded to the same ground, with their Wool, and Woofted Stockens exceeding 3 Livres the Pair ought to be Dyed, according to their finess, being to be Woaded as the Kings Blew; Those from 40 pence to 3 Livres as the *Turkish Blew*, and those of lower prizes as Sky Colour: But for the Wools for Farandines or other Stuffs where the Wool is Cover'd, 'twill be sufficient to Woad them as Sky Colours, this ground being enough to give these sorts of Manufactures a perfect Black,

Wool for mixtures.

Caps.

Stockens.

The Ground may be Augmented but not diminished.

CLXXXVII.

The great and lesser Dyers ought to be allowed to augment the ground in the Dying of Stuffs, whether that of Woad only or that of Woad and Madder, as the Merchants may (if they think fit to pay the Price for it) order a stronger ground, but it ought to be strictly forbidden to both Mer-

Merchant and Dyers, to Diminish or cause to be Diminished, the Grounds order'd by these Rules, because they ought at least to come up to that to deserve the Name of good Dyes.

Patterns of every Ground to be kept in the Halls.

CLXXXVIII.

And to the end that no Person may be excused from giving the due Grounds to all sorts of Stuffs, several Patterns of four Ells each, shou'd be Dyed with every sort of Ground, half of which to be lodged in the Hall or Corporation of Merchants and Dyers in every Town, to serve as Master Peices to have recourse to upon all occasions.

How Stuffs which have a good Ground must be well Dyed Black.

CLXXXIX

'Twould be to no purpose to take care that a good Ground be bestow'd on all Wool-len Manufacturs and Wools, if the same care be not taken that a good Black be Dyed upon that afterwards, by well Gallling them with a sufficient quantity of Galls, and Sumack, and if Sumach be wanting with *Rodoul* and *Fovic*, and tinging them Black in the same bath with a sufficient quantity of *Indian* Wood and Coperas with a little Verdigrease; the *Indian* Wood being first boiled alone, suffering it to take leisurely, often lading and Ventilating it, by which means the Black will be render'd more Beautiful and soft, as well as more certain and lasting, and wear

wear much better than if *Indian Wood* were not used in it. That Ingredient ascertaining and Meliorating the Dye, with the help of Galls and Coperas. Yellow Wood is also very useful in Blacks.

CXC.

'Tis not enough that care only be taken that a sufficient quantity of Galls, Coperas, *Indian Wood* and Sumach or *Rodoul* --- and *Fovic* in lieu, of it be used to produce a good Black. But the Stuffs ought to be spread at large in the Copper, and not crowded that they may not wrinkle and Burn rather than Dye.

Stuffs ought
to have
room
enough in
the Copper.

CXCI.

To prevent the Blacks soiling of Linnen Black or Blew, the Stuffs ought to be well cleansed before we begin to Dye them, and the Copper well prepared when we give them the Blew, and care ought to be taken that the Blew be not of Indigo alone, or used in a third or fourth reheating; because all these hinder the adhesion of the Dye to the Stuffs, and occasion its throwing it off upon Linnen. The Stuffs ought to be very well Washed after the Blew, and also after the Black, or rather pass a small fulling if possible, for the Blacker the Dye the greater is the difficulty of Washing it. Stuffs of price ought also to be passed through a *Spanish* Broom Bath to cleanse and soften them.

CXCII.

CXCII.

Quantities
Of Ingredi-
ents for
Blacks
ought to be
Regulated
betwixt the
greater and
lesser Dyers

As the quantity of the Drugs which the lesser Dyer ; is obliged to put into his Blacks, cannot be regulated, otherwise than upon the spot according to the length, breadth, fineness and goodness of the Stuff, it ought also to vary according to the variety of Grounds and 'tis then to be feared that the lesser Dyer should retrench, a part of the quantity, which shall be Established, to save his purse at the expence of the Dye;

CXCIII.

'Tis necessary that at the same time the division betwixt the greater and the lesser Dye is made, the quantity of the Ingredients which every lesser Dyer shou'd be obliged to use, in the dying of every sort of Stuff which they are accustomed to Dye back in every City, should be settled betwixt the greater and lesser Dyer, and orders given to the Jury of the great Dyers to go twice every Month, at least, to search the lesser Dye Houses, to take care of the goodness and quantity of the Ingredients, and the manner of using them; to the end that the Stuffs, to which they have given a good Ground, may also have a good Black bestowed on them ; and if the greater Dyers cannot agree with the lesser Dyers about the quantities, the Judges of Manufactures or Commissioners, may

may adjust and regulate them, from the Reasons of both sides, or according to custom.

CXCIV.

The better to oblige the lesser Dyers, to put in the just quantity of Ingredients, 'twou'd be convenient to cause three or four Ells of every sort of Stuff, and Ground, to be very well Dyed Black with the proper quantities of Ingredients, which should afterwards pass into a Rule of quantities; and these patterns to be disposed, one third to the Corporation of lesser Dyers, one Third to the Company of the great Dyers, and the other to the Company of Merchants, to serve as Master pieces and Patterns to determine concerning the goodness of the Dye, both as to its lustre and boiling.

Observations on the Ninth Part.

TO consider the Black Dye, after our Author seems to have Handled it to perfection, to render it yet more extensive and clear, and to handle it more Fundamentally, will not be improper. Wherefore to let his reasons, for the necessity of Establishing Madder, and other Grounds, or rather necessary Grounds in General, to let them, I say, depend on their own weight and not to touch upon §, 168. concerning the Working of Allom, because we have done it before; We shall immediately pass to 169, and 170. In the first, he gives

gives the reason of Madder Grounds being necessary from the advantage which accrues from its prevention of the excessive use of Coperas; but in the latter he gives a supposed answer to an Objection, not so slight as he would have us think it is. As to the first, 'tis easy to believe that to Dye a Stuff Dark Colour or Black, which hath already been Dyed a preparatory Colour require less of the Black or deep Dye than to dye it from White; but here are two difficulties to be cleared. First, whether less of all the Ingredients be required, or when prepared less of the Dye, or less of one Ingredient alone which the Author seems to mean, Secondly whether to Dye Black well, one Ground is better than another, and which is the best. To clear the first; 'tis necessary to lay down the whole Ground of the Black Dye.

He that by the help of Chymistry is somewhat acquainted with Nature, knows that in all Dyes produced from Vegetables, whether from Trees, Flowers, or Fruits, the Bodies, either Naturally or Artificially Salt produce several Alterations: also that all Acids, as Allom, Salt and above the rest sharp Acids or Acid Spirits, as those of Salt, Vitriol, and Vinegar, turn the Vegetable Dyes Red; and that if the Green Vegetable its self be infused in one of these liquors it is Tinged Red: The Alcaline Salts, as Salt of Tartar Pot-Ashes, and all boil'd Ashes or Lies and fixed Salts fetch the Colour to Green again. The Urinary Vo-
latile

latile Salts, as Salt of Urin, Urinary Spirit of Sal Armoniac. &c. rather turn the Dye thick then alter it. To give a remarkable Instance in one of these tender Colours. Take Tincture of Violets in a Glass, or a little Blew Lack infused in a Viol of Water, pour on it Spirit of Salt or Vitriol and it will become Red ——— throw in dissolved Salt of Tartar and it returns to its Colour, but put in too great a quantity of this infusion and it becomes Green, and of both more or less, as it proceeds from the one or the other; and this alteration is general to all Vegetables, with this difference only, that the fine or tender Colours are changed after a different way from the Gross and hard ones; the former, as we have already shewen, and the latter Change a quite different way, according as they have more or less of a Woody or Viscous Nature mixt with their Rosin and therein consisting Colour, as also according as the mixture is more or less subtil, as will appear hereafter. We find that Rinds, Wood or Fruit of vegetables, by the Addition of Allom, or which is more unlikely Vitriol, are charg'd from the most uncertain and Imperceptible Colours, to the most perceptible, namely Black. A most Remarkable Instance of which we have in the Oak Leaves, and Fruit, and more particularly in the Excrecence which grows upon the leaves thought to be little Berries or Galls, besides the Galls which are commonly produced by a particular sort of Oak.

Oak. 'Tis also to be observ'd of the Alder, that upon the proper mixture of broken pieces of it with Sumach, also here required, the prevailing Taste is according to the Physicians, an Astringent or Rough bitter and Salt, and when either of these is boiled with Vitriol it yields a Black Liquor; but other Astringent Vegetables do not produce the same effect, as clearly appears in immature Crabs or Choak-Pears, which if tryed will not succeed like the former Ingredients: But to solve this *Phænomenaon*, best, the bitter Saltness, ought to be Corrected with a Subtil Wood dust or Powder, which leaves a rougher farewell behind, and then the bitter Saltness is removed.

From whence may Naturally be inferred, that all Vegetables which are Astringent, and have a rough farewell; the more they incline to change Black, the longer their rough farewell lasts upon the Palate. On the Contrary, there are some Astringent Woody Materials, which are not Subject to this alteration; the best Instance whereof is Madder, which when boiled with so large a quantity of Vitriol or Coperas, that it turns to a Black Brown, if poured off and left in a Vessel to settle, the Brown will infallibly sink to the bottom, and leave the remaining Liquor of a Yellowish undistinguishable Brown: But boil the Madder first with Pot-Ashes, and then add a Solution of Vitriol and it will yeild a Dark Clove Brown, proportionable to the greater

ter or lesser quantity of each or both Ingredients, from which experiment I conclude, that Madder hath a quality which in conjunction with Vitriol, will produce a Black, tho' neither of them unmixt immediately yield that Tincture, yet the Vitriol seems to contribute the most, because mixt with Gall, as well as in conjunction with Madder, it produces Black, so that the latter seems not to be so Instrumental in the Black as the other. But the better to observe its defect, twill not be amiss to consider three things; first, If we compare Madder with Galls we shall find that the bitterness of Madder is more subtiler, but not so lasting and Poinant as the Galls, which leave a very perceptible Astringency in the Mouth, and the Madder is not so rough as the other; whence may be inferred, that its salt is not sufficiently near of Kin to be Corrected by ligneous matter, or that it hath a Root of a different Nature from the Wood, which is truly dissoluble into these salts. *Thirdly*, in Madder we may observe a plentiful Tincture, which is not obvious in Galls, but they are to be boiled with the Stuffs long enough to make your Powder stick in the Pores thereof, from all which it appears that there is no similitude betwixt the effects of Galls and Madder, without the intermediate assistance of Pot-ashes, which alter the Operation immediately. If we consider the effects of Pot-ashes upon Madder by a mixture of both, we may observe that the Madder

S

turns

turns to a Rose Colour or sort of Purple Blood Colour, but not in the least to the Black or Brown, for the Purple is a Red Blew and not a Black Red, from whence it may reasonably be concluded that the change in the mixture of Madder and Vitriol, is not in the least owing to the former. But now come we to consider what effect Pot-ashes have upon Vitriol; wherefore take Vitriol dissolved in warm Water, and put to it dissolved Salt of Tartar or Pot-ashes; after the putting in the Coperas or green Vitriol, and several Ebullitions, it becomes first Yellow and then deep Brown, or sometimes a Black Tincture, according as the Vitriol is impregnated with Iron, from whence I infer, that Madder could not contribute any thing to that end in our former Experiment; but let this Black Brown Liquor, produced from the mixture, stand a little to settle, or filtrate it, and the whole Substance of the Black Brown settles to the bottom or remains behind in the filtering Cloath, and the Liquor appears bright and clear; when on the contrary, in the before mentioned Process, with Vitriol and Madder, after the settling of the gross Particles, the Liquor appeared of a Clove Brown Colour, without diluting, and the Sediment fouler and thicker; from which it clearly appears that the Salts did not unite in that experiment, and that in the mixture of Pot-ashes and Vitriol, new Salts are produced. From what hath been observed; the Ground of the Black Dye may be Collected, for First, Every thing

thing doth not produce every thing, nor can you infer what you will, from what you will, but must determine from determined Principles. Black is not produced from every Ingredient, but from known Materials; among which experience tells us that Galls and Vitriol are best: The former is impregnated with a bitter harsh Salt, which Corrodes and Coagulates its own ligneous parts. And the latter is known to be an Acid, that also Corrodes and Coagulates Iron and Copper and upon a mixture of these two, the Alcalous Salt of the Galls so operates upon the Acidity of the Vitriol, and so unites with it, that a new Body is produced, both quitting their former Principles, *viz.* Subtil Oak Dust and Iron, which they suffer to sink to the bottom, and from this mixture the Black Liquor, a Body of a new Figure, is produced, which becomes thick from its contained Salt; and the Subtil moving Particles cannot so soon sink to the Bottom, but require sometime as appears clearly in common Ink, which at first continues blackest whilst the contain'd Allom and Salt of Vitriol are thick, but decant it and pour fresh Water upon it, and the Ink immediately becomes white: Decant the first black Ink, and set it some time in the Air, and the blackest thick matter settles to the bottom, tho' the Liquor by the Salts yet therein remaining, throws up the most Subtil Particles, not suffering them to sink to the bottom, the Liquor so that is yet black enough. Thus it follows from our Hypothesis above mentioned, upon §. 169. that according to

our mention'd Method the proper quantity of the chief Ingredient, *viz.* Vitriol, cannot be diminished without diminishing the other, or in reality the quantity of the Dye it self; but less quantities of these Dying Ingredients are necessary when the Stuffs have before received a Preparatory Dye; but it is not hence to be concluded that the quantity of Galls, Sumach or Alder Bark, may be encreased, and that of Vitriol diminished; for the blackness of the Dye is caused by the Subtil Particles of Iron, and by how much more Subtil the Particles are, so much blacker is the Dye (for the thick Particles contain but a very weak Styptick quality, and if they bind at all they Corrode the Stuff, which is the reason that the filings of Iron are forbidden, in all sorts of Black throughout the whole Tract;) now these particles precipitate & combine with the Subtil Ligneous Particles, and the remainder not having imbibed a sufficient quantity of Vitrioline Matter, remains Yellowish and can never to be tinged Black. But the better to clear this difficulty, let us examine, whether one lasting Dye conduces more to the Dying a perfect deep Black, than another, and which that is. Our Author himself seems to offer this to our Consideration, §. 170. in endeavouring to answer an Objection, which prefers the Blew Ground to the Red, because the latter is harder to turn black, and consequently requires more Coperas, which rots the Stuff. But to explain this, let us lay down two principles, which result from what our Author Asserts, *viz.* First, That
 Stuffs

Stuffs dyed from White to Black, or with a Black Ground, are not lasting, and for that reason want a slight red Ground: and, Secondly, That *Indian* or Blew Wood Meliorates the whole Dye: Then I would ask why the Red Blew or any other Ground is given to the Stuffs? To which 'tis answered, That it dries and cleanses the Stuff from its Oiliness and Spots as §. 161, but I dare assure the Reader, that this effect is not directly owing to the Madder, but if any thing of that Nature is to be expected, 'tis wholly to be ascribed to the Allom and Pot-ashes: But, Secondly, §. 163. We are told that this Process gives occasion to a more sparing use of Vitriol, but the reasonableness of that I am a Stranger to; for the Red Ground is given to the Stuff, as previous to a Black Dye, or that it should remain Red: If the first is design'd? Then doubtless something else must be added to make it Black, and there is no Ingredient that is known to do it better, nor so well as Vitriol, wherefore the more is required; for, First, There must be so much used as will blacken the Galls, and after that such a quantity a part as will tinge the Madder Black; and being convinc'd by the former experiment, that Vitriol will not turn Madder Black, nor even Brown without the help of a great quantity of Pot-ashes; it follows that the Red is not design'd to be changed in the Stuff, or 'tis contradictory to reason, according to the first cleared Hypothesis, and to Experience it self. But is the Red Colour to remain upon the Stuff? I

then ask why? but find the appearance of an Answer, §. 160. 161. That all high prized Stuffs ought to be Madder'd for four Reasons. First, because it renders the Dye better, finer and more serviceable; in what Sense it is better'd, may be collected from what has been said. Secondly, That 'tis finer, but then we ought to Consider which is finest, the deepest Black that continues Black to the last, or nearest to Black in the wear, or bastard Black, which appears Brownish to the Eye and wears Brown: Say it is the last, then our Authors assertion is good, and the Imposition continues, but stick to reason, and believe Black to be Black, and to be so much the finer, by how much Blacker it is, and the Consequence is obvious. Thirdly, But if it be asked which I think the best Ground, the Red or what other Colour? To this I answer, That if a Ground be necessary and advantagious, to the Stuff in preventing that so much of the Black Dye, or consequently of the Vitriol, be not required, and that it seems to be better cleansed, and more proper to have a previous dark Dye, which should cleanse and make it wear better; the Answer begets another Question, whether the Ground be best that is deepest or darkest, and approaches nearest to Black? If so, without doubt the Blew is more proper than the Red, and the Brown than both; for if we consider upon both accounts, which most Approximates to the Black, we then find no affinity betwixt that and the Red. But the
Brown.

Brown, especially the Walnut-tree Brown, seems to be very near a Kin to it, but mix it with Red and Yellow, and it is one third more remote. On the contrary, take white burnt Gypsum or Plaister, and mix it with a good Black, by how much better the Black is, so much finer will its produced Grey be, and take a well mixt light Grey, and it will be found to incline so much to the Blew, that 'tis hard to believe that it hath any Black in it, from all which I conclude, that no ground is more proper for Blacks, than Blew, nor causes the Black to wear better, for when it fades it turns towards Grey, which is a Species of Black: but I expect it should be warmly demanded whether the best Judges in the Art of Dying, would prefer the Blew before the Walnut-tree Ground in Blacks; but if they had ever been inform'd that the Walnut Dye produceth it self a principal Black, and is so used by the Silk Dyers, they would give place to the Blew. And if any would ask why the Stuff should not be Grounded by the Brown, when it hath been sufficiently proved above, that the Black Dye is the deepest Brown, and is hard, rough, and astringent from its darkness of Colour, and therefore less of it should be used, and if it be consider'd, what Ingredients must be used in the Walnut Brown, and that the Black can only be help'd by its like, viz. Vitriol, upon reading §. 163, and understanding it, we will not be easily made to believe that many

wonderful Arguments lye against it : Not to insist that according to this way, the ungrounded Stuffs which are design'd to be Dy'd immediately from white to black, differ in nothing else, from those Grounded with Brown, but only in the Preparation with Galls, mention'd §. 4. From all which I take it for granted, that I have sufficiently proved the Blew Ground to be best, and leave those who are fond of our Author's Opinion in Favour of the Red Ground, corrected with the *Indian* or Blew Wood, to their choice, whether they had rather choose a Dye prepared from pure lasting Materials, which is fundamentally good, or perform the Operation with useless Ingredients, with the addition of another full as worthless, and render the Dye weak and fading : And so much for the decision of the first Question.

After having consider'd the Ground of the Black Dye, proceed we to the practick Part thereof, so far as is necessary to a fundamental Instruction in general ; which, 'tis plain, from the Reasons above mention'd, consists in the proper use of Vitriol, and the before named Vegetables, besides some others which are either not so much in use or not so well known, call'd by the French *Redoul* ——— and *Favic*. 'Tis the greater part of practick Dying by uncertain Experiments to discover the proportion of Vitriol and Galls, which will produce the design'd Dye, and what farther quantity is to be added to heighten it as much as desired

red and not more, to which end take Galls, break them to pieces or beat them small, boil them pretty long in Water, let it cool, and strain it through a piece of Cloth, so carefully that none of the thick part pass through; then take Vitriol, lay it thin upon a Dish, put it into a warm Stove or Oven, or in Summer expose it to the Sun upon a piece of Slate, till it becomes friable, when it will be white or a little Yellowish, and turns to Powder, which lay in fresh cold Water, stirring it, after which let it stand a whole Night, and then you will find a Yellowish Sediment at the bottom of the Glass, decant the Liquour so far as 'tis clear, and filter the remainder thro' Brown Paper, still taking care to put an equal quantity of Water to each proportionable to its Weight, one being to be boiled the other to be stirred. For Example. Take one part of Galls, and half part Vitriol, and let the proportion of Water answer to each of these, otherwise if too great a quantity of Water be used, it will cause a remarkable difference in the Black. But to come to experience, take first of this Gall Water one part, and of the Vitriol Water half part, mix them together in a Glass Vessel, in a second mix one part Gall Water, and one third part of the Solution of Vitriol, and in a third mix one part of the one, and a fourth part of the other. Set these Glasses in an exact equal heat, in an Earthen Furnace, so that the one is not more remarkably warm than the other, and the quan-

quantity of Liquor proportion'd to each, and you will find the less quantity of Liquor hot first, and mix and incorporate its self with more warmth than the larger quantity : when it seems to heat without boiling, you may make your Observations upon them successively : And as many proves as you make, take so many pieces of white Paper, and make them up in Conical Shapes like our Sugar-loaves, and into each of these pour as near as possible an equal quantity of the Black Liquor in each of the Glasses, marking the Cones which Glass they belong to, by which you will easily be enabled to make a Judgment, which is the blackest, and that is certainly the best.

I have formerly put one part Galls and half part Vitriol, but it succeeded only according to example. If an equal quantity of each be tried, the experiment will not be accompanied with any inconvenience, but it is certain that betwixt the Galls and Vitriol, you may try withal, the proportion of mutual Cohesion or degree of Black being adjusted, the Galls will not imbibe any more Vitriol than necessary, and so the Dye will not be deepned by any addition thereof, and in one word, 'tis absolutely necessary, and of the greatest importance, by this or some other Experiment, to find the nice proportion of Vitriol to the Galls, which will so deepen the Dye, that a farther addition of Vitriol cannot render it Blacker : In order to which I dare assure any Critic that he may easily see, that when he has once di-

discover'd the just quantity of Vitriol, however great it be, he need not be afraid that any inconvenience will accrue thereby. When the Dye is once perfectly made, if you throw in yet more Galls than the above-mention'd proportion, they have no more effect than if you threw them out of the Window, and repeat the Attempt, and you will find it the same thing. On the contrary prepare the Dye from the just proportions, and as much or as many times as you boil it, after 'tis once finished, so much you make it worse instead of improving it, tho' you throw in fresh Colour, for you do not leave it half its strength, the other being evaporated. Secondly, 'tis absolutely necessary to discover the just proportion of Galls and Vitriol, because too much Vitriol is of worse consequence than an excess in Galls; the reason is plainly this, tho' as is sufficiently proved by the mentioned experiments, that 'tis utterly impossible to produce a Black Dye without Vitriol, Yet it is as true that too much of it renders the Suds Corrosive and sharp, wherefore the Black Dye by reason of its necessary corrosive Ingredients is the most destructive to the Stuffs, and so when more Vitriol than is absolutely necessary, is used, the Stuff is more Corroded than necessity obliges, and therefore the damage is greater on this side than on that of the Galls; for let a Dyer throw in a fourth part of a hundred weight of Galls to a quart of Vitriol the damage is not much, but a piece
of

of Stuffs of twelve or thirteen Pound price is quickly so spoiled, by too much Vitriol; that the Threads are visible, and tears as soon as put upon the Body, and 'tis here to be observed, that the Dyer will not be willing to make good the Damage, any more than he will part with his Suds as long as a handful of Coperas will the least ferment it, wherefore by Reason of the great Damage hereby accruing to fine Stuffs, 'twould not only be proper but absolutely necessary to decide the quantities by Experiments, and when once found, the Dyer ought to regulate himself according to that ever after, as our Author has in §. 193, 194. Upon which we ought to observe that the allowed variation of the quantities which he seems to hint at, is not to be understood of the two above mentioned principal Ingredients, but of the less considerable, which are used to a different end from the former, as the Blew Wood, Sumac, Rodoul, Fovic and Yellow Wood, of which he speaks §. 189. I remember here what I have said above, upon the deepning the deepest Dye of Galls, that there were two things to be consider'd, which as soon as one is clear'd, the other manifestly follows. And without doubt much more might be added, but some will be apt to say 'tis impossible to prescribe the just proportions of Galls and Vitriol, by these or more experiments, so certainly as to pass into a Rule, because of the great difference there is in the goodness of the several sorts of both Materials, but especially of the latter, for which
rea-

reason I exprest my self a little particularly above, *viz.* (*The Galls and Vitriol you make the Experiment withal*) and farther I own that the difference is so great, that it would cause a great alteration in the Dyes, and that so much that it is better to continue in the old way, than in the least to found a decisive prescription upon this Experiment.

Galls are the most useful and common Materials in Dying the Black Dye. Sumach tho' not so frequently used, is to be valued for rendring the Dye soft and delicate, which is otherwise harsh and untractable from the Rough and Astringent Nature of the Vitriol or Coperas and the Galls: but our Author ascribes this softning quality to the Blew or *Indian Wood*, §. 29. and to the Yellow Wood also. Verdigrease is wholly useles and may be omitted, because it contributes nothing to the chief Dye. Alder Bark is not of any great use as to giving a Colour, but mixt with Cutlers or Smiths Dust it softens the harsh Dye, and besides that, it Dyes every thing, and is a right Hair and Silk Dye, especially to be valued for its softning quality as above, in which it may be rank'd with *Indian Wood*, and is common in the Blew Dye, which is assistant to the Black; this Ingredient it self is of a Colour inclining to Black. Smiths Dust and filings are not useful, but are attended with the ill qualitics above mention'd, for which reason the following receipt gives us but a very ill Black Dye, *viz.* To one pound of Stuff put a handful of Iron filings, a hand-

handful of Alder Bark; The raspings of Brasil Wood and Vitriol, of each half a Pound, Verdigrease half an Ounce, and of Gum one Ounce, let them boil together half an Hour, then put the Stuff into it and let it continue an hour therein with the Liquor hot, but not boiling, when it is cool put it in again, and so repeat the process to the third and fourth time. This process would be much better'd if the filings and Verdigrease were omitted, and the Brasil raspings at least one half diminished, and an Ounce or more of Galls added instead of it. Gum may also be omitted and kept till they come to the press, wherefore the following Process is much better, *viz.* R. Galls two Pound, Alder Bark two Pound, Yellowwood Chips or Saw Dust 1 lb and half, let it boil three Hours, after which take out the Stuff and cool it, then add Sal Armoniac one Ounce and half, and let it boil one hour, take it out cool and cleanse it, and you will find it dyed a fine Black. Note in this Dye the quantity of Galls may be diminished, and that of Alder Bark encreased, or the contrary upon occasion: That the Yellow Wood Chips may be diminished, and in the room thereof *Indian* Wood, or which is better Woad may be substituted. Madder or Brefflaw Red a quarter of a Pound may also be added, Sumach is very proper in the Process, but it is usual to substitute the infusion of Blew or *Indian* Wood in its place: To conclude 'twould be better to use the Blew infusion in the first
Suds

Suds instead of Yellow Wood, or at least half of it, because tho' the latter throws the Dye upon the Stuff very well, yet it doth not like the former deepen the Black, as well as fix the Dye upon the Stuff. A Black may also be produced from Alder Bark, with the addition of Sumach or Infusion of *Indian Wood* or both together. 'Tis certainly best to Dye the Black upon a Blew Ground, and next that upon a Red. The Dyers have several ways of Glazing Blacks and other Dyes, but that does not belong to this place, wherefore so much for the five simple Colours.

P A R T X.

Of the Ground and manner of Dying Black those Stuffs which have changed their Colour: The manner of Dying, and the proper Black for Stuffs which are to be mended, and for Wools serving for mixtures, also the way to lower the price of their Dyes, and of those of slight Stuffs, with the manner of making and Drugs necessary to make, the proof Suds.

CXCV.

AS the Four first simple Colours, viz. the Blew, Red, Yellow & Brown, may be compared to the four Elements, the three first to the

The four
first Colours
compared
to the 4 Ele-
ments and
the Black
to Night &
Death.
Black ought
to be the
end of all
faults in
Dyes.

the Transparent and Lucid, and the last to the Opacity of the Earth; so Black may be compared to Night and Death, not only because all other Colours are deepned and buried in the Black Dye, but that as Death puts an end to all Evils of Life, 'tis necessary that the Black Dye should remedy all the Faults of other Colours, which have been occasion'd by the deficiency of the Dyer, or the Dye, or the change of Fashion according to the times and the Caprice of Men.

CXCVI.

Out of
Fashion Co-
lours to be
changed
why and
how.

Wherefore it is not reasonable nor advantageous to the publick, that a Stuff which is rendred unsaleable on the Account of its Dye, should remain in the Warehouse a Prey to Moths and Vermin, when it may easily be sold if Dyed Black. 'Tis therefore necessary to permit the Dying of Stuffs of faded or old Fashioned Colours, Black or darker then their former Colours, and make provision for their Dying and finishing in the most proper manner, for the goodness and beauty of the Dye, and the lasting or wearing the Stuffs themselves.

CXCVII.

The Second
Ground
ought to be
given suit-
able to the
first.

To arrive at this end, 'tis necessary to consider the first Ground of the Dye, in order to Dye and finish it well in the Second, whether the first Ground is alone sufficient to perfect the black; for instance, if the Co-
lour

lour or ground be a Pale Blew, it ought to be grounded or prepared to receive the Black Dye or Maddered if the goodnes of the stuff require it: If it be Red it ought to have the necessary blew ground; if it be Yellow it requires a Blew or Blew and Red ground, if the goodnes of the Stuffle requires it, in order to produce the Black Dye.

CXCVIII.

If the Stuffle is of a Colour wherein the parts of the Walnutt-tree have been used, and it hath been Brownd without being boiled, care ought to be taken, that the Stuffle be not boiled in order to Madder it, because the acrimony of the Allom will harden the Wool in the Bath, and dispose them to burn by reason of the acrimony of the first Dye; but in this case we ought to content our selves with well Woading them, after having passed the Stuffles through two or three old or weak Suds, or such as have been used, to soften them, and discharge as much as possible the harshness of the first Dye, whereas the good Bath or strong Suds would spoil the Stuffles; which being Woaded according to this manner become limber and pliable, and the Dye thereby rendred sufficiently lasting.

Stuffles Dyed
with sharp
Dyes ought
neither to
be boiled
nor Madderd

CXCIX.

'Tis of great importance to know
the nice way of managing the Black Dye,
T to

Galling or
Preparing
with Galls
the stufes
which have
received a
Corrosive
Dye.

to be given to Stufes which have before received their Dye from Corrosive Ingredients, and to take particular care that they be not boiled in Galls or Black Suds, but to the end that they may the better receive their Colour they must be Dyed cold; the Galls, Sumach, and *Indian* Wood ought to be first boiled together, and after the Fire under the Copper is extinguish'd, the Stufes ought to be put in and left to be Galled without any Fire, stirring them from time to time for the space of Ten or Twelve Hours, after which they may be taken out and ventilated whilst the Suds are again heated, then the Stufes ought to be put in again, managed and remain as long as before.

CC.

Their Black
Dye:

To make the Stufes Black after they are taken out of the Suds and ventilated, the same Bath or Suds ought to be heated again, and so put in afresh *Indian* Wood which hath been boiled apart and left to cool for 3 or four dayes, and the Suds being hot enough then the Coperas should be put in, which ought to be left to dissolve very well and incorporate with the other Drugs; after which the Fire should be extinguish'd or removed, and the Stufes put in and stirred pretty well at the beginning to unite the Dye, as also afterward from time to time for the space of 24 Hours; after which they may be taken out and aired, whilst the Bath is

re-

reheated a little, that they may be put in again, and remain the same time if not longer. The Suds had much better be too cold than too hot, and Galls and *Indian Wood* should by no means be used too sparingly, that the Stuffles may be rendred softer and more pliable: Yellow Wood is also very good for these sorts of Blacks.

CCI.

Verdigrease may be used in order to make the *Indian Wood* take the better in the Black; but if too much be put in, or the Suds be suffered to boil too much in the reheating, the Stuffles are thereby rendered stiff and Gummy. The experienced Dyer may use it effectually, and the others may be informed by reading these two Articles, which will both point out the evils, and their remedies. These sorts of Black Dyes are Galled and Blacken'd better in a Wooden Fat than a Copper or Caldron, which in this case serves only to boil the Drugs, and reheat the Suds.

CCII.

But because several may make use of this expedient to deprive the Stuffles of their necessary grounds, and to make a Redyed Stuffle pass for a Colour Dyed according to the Rules, 'tis necessary that the Great Dyer, should leave a little Rose Mark of the Colour which the stuffle was of, before it was

Little Rose
mark of the
Dye.

begun to be redyed, and the lesser Dyer should be obliged also to leave another of the Colour of the good ground which the great Dyer sent to him before it was Galled, and Blackned; so that if this Stuffle hath a little White Rose Mark it may also be left after it hath recieved the Woad and Madder Grounds of the good Dye, for a more ample Justification of the goodness of the ground which was given it.

CCIII.

Black stufes
ill Dyed
how cured.

TO Those Black Stuffles which are seized and condemned or fined for not having been regularly Dyed, and ordered to be redyed, cannot be Woaded or Madder'd, without a very sensible injury to them and the Dye, and being once Galled they cannot be regalled without hardning the Stuffles and preventing their well wearing and lasting.

CCIV.

But to the end that the Stuffles may be Dyed as fine and good a Black as is possible without injuring them or cheating the Publick, 'twill be necessary to boil a good quantity of *Indian* Wood three or four Hours long, and having cooled the Suds, to put into them a third part less of good beaten Galls than *Indian* Wood, and a very little Sumach: reboil it three Hours together, after which having again coold the Bath put in a little Coperas which ought

ought to be left to dissolve very well and incorporate with the rest; after which removing the Fire from under the Copper, dissolve a little Verdigrease in the same Suds, after all which the Stuffles may be put in and stirred, raised, ventilated, and the Dye reheated as specified above in the Articles 198 and 199. The Wooden Fats are also more proper for these redyings of Blacks, than Caldrons or Coppers, and in case of deficiency of Sumach, *Rodoul* and *Fovic* may be used, as may also Yellow wood.

Fats better
for redying
than Cal-
drons.

CCV.

There are three things in the present manner of Dying Wool Black, which injure it, harden it, hinder its Combing and render it inflexible to the Spinner, and occasion the wasting of near twice as much in the spinning and Combing.

Causes of
spoilng the
Wools for
Mixture.

CCVI.

The First is the Walnut tree ground that is given to the Dye, which gives beginning to these ill effects.

CCVII.

The second is too great quantity of the Coperas that is required to be used, for want of adding Woad which augments them.

CCVIII.

And the Third is, letting it boil too much either in the Gallings or Blackning wherein no *Indian Wood* hath been used, which makes the Black take better : for this finishes them.

CCIX.

The Proper ways to remedy those evils, and to have Wool Dyed in perfection without being hardened by the first Ground, by the Gallage, or by the tinging Black, are.

CCX.

First, in lieu of Walnut-tree Ground which hardens the Stuffles, the Woad Ground which softens the Stuffles, should be used stronger or weaker in proportion to the fineness or coarseness of the Wool, or the price of the Stuffles in which it is to be used.

CCXI.

Secondly the Galls ought to be very well boiled, with Sumach, or for want of that with *Rodoul* or *Fovic*, and after having put in *Indian Wood* which hath been boiled apart, the Wools ought to be put in, giving them but a moderate heat, but keep-
ing

ing them a long time in the Gall'd Liquor without boiling, because boiling will felt the Wool, after having taken out the Wool and aired it put to the same Liquor the *Indian* Wood with a little Verdigrease and one third or half less than usual of Coperas, then put in the Wools again, keeping them a long time in these Black Suds, taking them out and airing them twice, taking care that they have but a very gentle heat, and by this means you will have a very fine soft Black, and the Wool will be render'd flexible, its grain fine, and the flocks and waste will not in the least be augmented. This sort of Black Dye will preserve the Wool and keep the Money in *France*.

CCXII.

Wools designed for mixture before they are Dyed the Grounds of the Stuffles, wherein they are designed to be mixed, need not have a Colour so lively and bright as that of the Stuffles, that the Dye may be rendred as cheap as possible, without prejudicing its goodness: 'Tis necessary that all Reds of fine or midling Wools which are used to be Dyed with Brasil should be done with Madder, which is not much dearer than the former, which is a bastard Colour.

Proper methods to lower the price of Dying Wools for mixture.

CCXIII.

The Violet Dove Colours, Purple, Pansy, Flax blossom, silver Grey, and such like Co-

lours, in Wools for Mixture accustomed to be Dyed with *Indian Wood* and *Brasil*, or *Woad* and *Brasil*, should be *Woaded* according to their respective sortments of of Colours, with *Woad* and *Indigo*, or with the slight *Woad* and *Indigo*, then boiled with *Allom* and *Tartar* (the Greys but half so long as the other) and afterwards *Cochinealed* with the slighter sort or wild *Cochineal*, and to lower the Price yet more, the *Suds* may be augmented with as strong a *Madder Ground* as they can bear: according to Article 48 of this Instruction.

CCXIV.

Woad should rather be used in conjunction with *Madder* than in conjunction with *Wild Cochineal* in *Grey* and *Walnut tree Dyes*, for high priced Wools for Mixture, because the reddish tincture which the *Madder* gives them will serve for an introduction to the *Walnut-tree Dye*, as well as that the *Dye* will be as good and cheaper; but if the Colour should be *Red*, a little *Wild Cochineal* ought to be used, to sort the Colours to their proper Mixture,

CCXV.

For *Tawnies*, *Dry Rose*, *Amaranthus* and other the like Colours, of the same Mixture, in fine or midling Wools for Mixtures, 'tis necessary

cessary to Woad them with both sorts of Woad and Indigo, after which they should be boiled with Allom and Tartar, then Madder'd with good Madder, and at last passed through a Wild Cochineal Suds; if the Great Dyers rebate in the Woad, Copper doth not sufficiently redden the Colour to adjust it to its sortment.

CCXVI.

It is unnecessary to speak of the Greys prepared with Galls and Coperas, or the Browns made with the several parts of the Walnut tree, because the small rebate of Madder or Cochineal which the greater Dyer may use in his remaining Suds, in order to produce the desired Colours, cannot sensibly augment the price of their Dyes: But all sorts of Dyers, Clothiers or Makers of stufes, ought to be forbidden the use of Lime or quick Ashes in Wall-nut tree Dyes, to redden and augment the Colour of Browns, because it hardens and burns the Wools and stufes.

CCXVII.

It ought to be lawful for the Greater Dyers who have attain'd any secret, or particular Method to diminish the price of Dyes for fine and midling Wools for Mixtures, without injuring the Wool or altering the goodness of the Dye, or improperly suiting the sortment of Colours, to

Any manner of Dying which is particular to one man & good, ought to be permitted.

to make use of it after they have made appear of what advantage it is, and obtained permission, provided they don't use therein *Indian Wood*, *Brasil*, or *Orseile*—— or other Drugs prohibited in Dying fine or midling Wools for Mixture.

CCXVIII.

Coarse
Wool.

Coarse Wool or those used in Mixtures of Stuffs not exceeding 30 Sols the Ell, ought to be Dyed according to the Ground of those lower prized Stuffs wherein they are to be mixed, that the Dye may not be too dear; but justly suited to their worth: namely all the Greys and Walnut-tree Dyes ought to be Dyed with Gall, Coperas, Walnut-tree root, *Indian Wood*, and *Orseile*, according to Article 74. The Violet, Dove Colours, Purple, Flax and the like Colours, with Woad, Allom Tartar, Wild Cochineal and Madder; according to Article 211. The Tawnies, Dry Rose, and Amaranthus Colours, with Woad, Allom, Tartar, and Madder, according to Article 213. But in Violets, Dove Colours, Flax and Aramanthus, Tawny, Dry Rose and the like Colours, in slight Stuffs and spun Wools of a very low price, to reduce the price yet lower; Flock or *Orseile* Suds may be used according to Article 52 and 72. But it doth not follow from hence, that they should be used in Wools for Mixture, which ought to be Dyed according to Article 111. and 113.

CCXIX.

CCXIX.

We ought to be inform'd that by Woad-
 ing, ought to be understood the ting-
 ing Wool or Stuffles Blew, and that tho'
 Woad seems only to be hinted at in the
 word, yet the best Woad, slight Woad, and
 Indigo mixt together is to be understood
 according to the Articles 8. 9. 10. 11. As
 under the term of Gallling or Engalling be-
 sides Galls, Sumach, *Rodoul* and *Fovic* is
 comprehended, tho' one is more proper for
 some Colours than the other; also under
 Walnut-tree Dyes only is meant the Dye
 prepar'd from the Bark and leaves of the
 tree, and the Nut-shells, which are three
 Ingredients proceeding from the same Tree
 and all serving to the Brown Dye.

The mean-
 ing of the
 Words
 Woadling,
 Gallling or
 Engalling,
 and Walnut
 tree Dye.

CCXX.

The Proof Suds being the Tryal which
 discovers the goodness or falsity of the
 Dye, as the refining Pot the fineness, do's alloy
 or baseness of Metals, and it being impos-
 sible to justify the Colours before they
 are prepared, 'tis necessary in the last
 place, to insert the Proof Suds into this
 Instruction. To the End that having al-
 ready been inform'd of Drugs necessary
 to the perfecting of Dyes, by the Proof
 Suds, we may be enabled to pass a solid
 Judgement of their goodness or falsity.

Proof Suds.

CCXIX.

CCXXI.

Little Rose
Marks the
clearest
Proofs.

Though the Proof Suds are used for the justification of the Ground of a Black Stuffle, the proof is not so evident nor so easy as by little Rose Marks, the sight of which alone shews the Strength or weakness of the Ground, which hath been bestowed on the Stuffles, as it is specified in Article, 107. &c.

CCXXII.

Manner of
making the
proof Suds

The good Woad Ground well applied to a Stuffle being finished to a Black, looses nothing in the proof Suds, and the Madder very little, so that though the dose may be augmented for the Blew, yet we ought to content our selves in order to make it uniform, with using sufficient quantity of Starch Water, Allom and Tartar as much of each, as the Black Patterns, which you would prove do weigh.

CCXXIII.

This being done, boil the Patterns half an hour in the Starch Water with the above mentioned quantity of Allom, and Tartar, and the Black Patterns which have been Woaded to an Aldégo or Pearl Blew, will become Blewish inclining to the Green Brown or Olive, the First darker than the last: But if they are Woaded and Madder'd,
one

one will become of a Clove Brown, and the other darker than Princes Colour.

CCXXIV.

Those Patterns which have been Woaded to the Kings Blew, or *Turkish* Blew, being proved in the same manner, will become of Green, Brown, or Olive Colour; tho' brighter and more inclining to the Green, than the abovementioned: but those which have only been Woaded to a Sky Colour, will turn to a slight sort of Blew enclining to Olive green, and those which have had the mignon or faint Blew, will come out of a Goose-turd Green.

CCXXV.

Patterns of Black Stuffs neither Woaded nor Madder'd, boiled in the same manner, will not in the least incline to Green, but become of a Colour betwixt Yellow and Brown.

CCXXVI.

The Patterns of Black Stuffs which have been Woaded, and afterwards Walnut-tree Grounded instead of being Madder'd, being boiled as above, have no real lustre of Red, but become of a sort of Olive Colour'd Bear Grey, more or less dark or enclining towards a Red according as more or less Woad or Walnut tree hath been used;
but

but if they have not been Woaded at all but only Walnut-tree Dyed, they will become of a Musk or deep Nutt Colour.

Malter pieces or patterns ought to be boiled with the suspected.

CCXXVII.

But because the Patterns may change Colour more or less in the proving, as well by the Strength of the Drugs of the Galled Ground, as the black afterwards given to it, or by the boiling it self, which may in some measure disenable us to give a perfectly decisive determination concerning the goodness or Badness of the Dye; 'tis necessary for an entire justification to take one of the Prooves Master Pieces, or Patterns out of the Hall, to boil with the suspected Pattern, to the end that both being boiled together we may be better enabled to judge of the goodness or badness of the Dyes, by comparing one with the other.

CCXXVIII.

Boil'd proof to justify the proper finishing of the Blacks.

'Tis not sufficient to make appear by the Proof Bath whether the Woad Ground only, or the Woad and Madder Ground be justly given to Black Stuffs by the Great Dyer, if by another Proof Bath we cannot examine, whither they are well Gall'd and Blacken'd with the necessary Drugs by the Lesser Dyer, according to the proper quantities regulated in §. 193.

CCXXIX.

CCXXIX.

And tho' there is not always occasion for a Proof boiling to examine ; as well because they may be judged by the Eyes and handling the Stuffle, still comparing them with the Proof Patterns, which have received the same Ground according to §. 194. Nevertheless if the Eyes be not sufficient and the Black is doubtful, a half Proof Bath ought to try them ; which is made with a sufficient quantity of Starch Waters, and Allom, and Tartar, half the Weight of the Patterns in question, and the Master proof Patterns, which ought to be boiled with it for the space of half an hour, to the end that after the boiling they may be compared together.

CCXXX,

But if this Proof Bath is yet too strong, and it discharges the Black of the Master Proof Patterns as well as the other, it ought to be weakned by retrenching yet one half of the Allom, and Tartar, and halving the time also, boiling it but a quarter of an Hour.

CCXXXI.

Blew if the Dye be good never looses its Colour: it may be proved in the same manner, and with the same quantity of Drugs, with the Black

For Blew.

Black in §. 221. 222. And if it changes or sensibly looses its Colour, 'tis a sign the Dye was bastardized.

CCXXXII.

For Crim-
son.

Cochineal not adhering so well to the Stuffle as Blew, the Colours Dyed by it ought to be boiled with one quarter part of the Weight of the Patterns, Allom and a like quantity of Tartar, and permitted to boil but half a quarter of an Hour.

CCXXXIII.

For other
Colours.

For the examining of all sorts of other Colours, to know the Ground; we ought to put in equal quantities of Allom, as well as Tartar, to the weight of the Patterns, and to let them boil half an hour; and in all sorts of Prooving Baths, the Master Proof Pattern ought to be put in to boil together with the other, that by comparison wee may be the better enabled to judge of the goodness or falseness of the Dye.

CCXXXIV.

But because there are several Colours, which tho' good, cannot bear the intire boiling examination, 'twill be proper to cut off a little bit of every Pattern, as well as off the Master Proof Pattern when they have boiled but a quarter of an Hour,

to

to compare them together, and if they appear exactly alike the remainder of the Patterns may boil the other quarter of an Hour, that by the comparison of them together, and with the Master Proof Pattern, we may the better judge of the goodness or falsity of the Dye : This method ought to be used in all sorts of Proof boilings, for greater precaution.

CCXXXV.

It being not less necessary to examine, whether middling and high prized mixt Stuffs are of good Colours, than whither they are as long and broad as they ought to be. It would be very proper, to prevent the intelligence which may be established betwixt the Makers, Dyers and Merchants, to falsify the Dyes of Wools for Mixture, that they being carried to the Hall after being fulled, in order to examine their length and breadth, the goodness or falsity of their Colours should also be examined, which if suspected may easily be done, by a Proof boiling of $\frac{1}{4}$ part of the mentioned ingredients, viz. $\frac{3}{4}$ less of Allom and Tartar than the weight of the Patterns, and letting it boil half a quarter of an Hour, but if the Ground of Blacks in the Wool in the Mixture is to be examined, the weight of the Drugs and time of boiling should be doubled: and if the Colours prove good, they may be sealed with a seal with the name of the Town, and the Maker, and the Words, *Good Dying for Mix-*

ture, or *Bonne teinte pour melange*, in *French*; but if they are found of a bastard Dye, they ought to be handled as other false Dyed Stuffs, because they are not less prejudicial than they.

Observations on the Tenth Part.

THE Title of this Part contains its just Contents, *viz.* of Redying those Stuffs which lye upon the Traders Hands, because their Dye is either not good, or out of Fashion; and afterwards of the proof Boilings, in order to examin the Goodness of the Dyes. As for the Redying Stuffs you have §. 195, the conveniency, §. 196, the reasonableness, §. 197, &c. the necessary Care to be taken in the performance of the Work, So that I shall recommend what our Author hath said to the Memory, Experience and Consideration of the Ingenious, §. 197, we are inform'd that if the present Colour of the Stuffs, to be Redy'd, is not one of the Grounds for Black, *viz.* Red or Blew, they must first have the proper Grounds bestowed on them, in order to produce a good Black. What is offer'd in §. 198. concerning Stuffs, which have before received a harsh and rough Dye, as Walnut-tree Brown, ought to be very well observ'd, What follows, §. 199. being Instructions concerning the Redying of those Stuffs before Dyed with corrosive Materials, is not only advantageous, but absolutely necessary to be considered, and what Rules are afterward given for

for the Dying of Wool, to §. 220. are very just, but what follows wants explanation in order to a thorough Knowledge of them. The Author asserts §. 230. that the proof boiling discharges the Black Dye, if the salt Materials be used in too great a quantity, or the Master proof Patterns too long boiled, or if there be an excess in both the quantity and operation; 'tis not here to be understood that the Black Colour in its whole Substance is attracted by the proof Suds, so that the Stuff should remain white, but that its Colour is hereby changed, as §. 226. we are told they will change to a Colour betwixt Yellow and Brown: by §. 222. we are informed that the proof boilings prove the Blew unchangable, which is confirmed in §. 231. nor is the Madder Red much damaged or changed by the proof Suds; from all which we may deduce the Fundamental Reasons of the Proof Suds, if we consider, First, That the proof boiling turns the Colour to a Brown Yellow, if the Black have had no other Ground than its own Dye: Secondly on the other side if it hath had a Blew Ground the proof changes the Pattern to an Olive Green, and it is very well known that Yellow and Blew produce a Green, which may be turn'd to Olive Colour, by mixing it with Brown. Thirdly, If the Master Patterns have had both the Woad and Madder Ground, they will change to a Yellowish Brown which may be produced by mixing Blew and Red, as §. 49. we are informed the Minime or deep Tawny, and a light-

er Colour call'd Princes Colour, remain after the proof according to §. 223. 'Twill not I hope be labour lost to inculcate the Authors two Observations concerning boiling Proofs, the first that the Rose Marks are more certain indications of the Dye, as in §. 221. Secondly, That as in §. 227. The Master Pattern should be put into the proof boiling, with the other Patterns, that by comparison we may be enabled to make a better Judgments than by sight alone can ever be made.

P A R T. XI.

Of the Dying of Thread, and Cloth made of Hemp, Flax or Cotton, with whatever is necessary to the perfection of Silk Dying, and the making and Dying of Hats.

CCXXXVI.

Dying of
Thread.

THe General Rules of *August* the 13th 1669, being extensive enough, and having sufficiently provided for the Dying of Thread and Linnens, whether made of Flax, Hemp or Cotton, 'twill be unnecessary to speak of it here; but though the same General Rules, and a very particular as well as useful and judicious instruction, (afterwards drawn up,) how to Dye Silk a light Black, and to prevent the common surcharge of Galls used in Silks; an abuse very

very

very prejudicial to the Publick, seen to ^{And silk.} have given the last stroke to good Silk-Dying; it will be nevertheless yet necessary to preserve the mutual trust and justice of Commerce, and to cause us to put a true value upon Silks of good Colours; and since the slighter Colours often seem and are more beautiful and bright, than the true Crimsons, 'tis necessary (I say,) they should be distinguish'd by some Mark, to prevent the publick from being defrauded.

A Mark necessary to the Crimson Dye.

CCXXXVII.

For raw silk

In order to which it would be necessary, to forbid all sorts of Merchants or Silkmen to sell, expose to sale, or distribute any raw Silk for Crimson, which (besides the ordinary Mark,) is not marked at the End of the skain, or at the Ribbon that hangs at the end, with a lead containing on one side the sellers Name, and on the other *Cramoisy i. e.* Crimson, with the Name or Cypher of the Town, where it was Dyed, that if the Silk be ill Dyed, the Buyer may have recourse to the Merchant that sold it; and as to the Merchants having remedy of the Dyer, he ought to take care as soon as the Silk comes out of the Dye-house, that it be Viewed, Examined, and Marked in the Court or Hall appointed to this purpose.

CCXXXVIII.

CCXXXVIII.

Silk Stuffs

And a precaution with respect to Silk stufes being no less necessary, since the shining lustre of an ill Dye, causes it often to be preferred to a good one, through the ignorance of those who buy it for wearing; 'twill be farther necessary to forbid all Mercers, Weavers, and Silk Manufacturers, to sell, expose to sale or distribute any Silk Stufes for Crimson, which are not also besides the ordinary Mark, first mark'd at one or both ends (if the piece is to be cutt) with a leaden Mark, containing on one side, the Name of the Merchant that gave the Silk to be Wove into Stufes, and on the other Word, *Cramoisy i. e.* Crimson, with the name or Cypher of the Town, where it was made; to the end, that if the Stufes be not of right Crimson Colour, the buyer may have his remedy against the Dealer, who caused it to be made and sold it.

CCXXXIX.

Pale Blew.

And because the Pale Blew's are more beautiful, and don't so much encline to Green, or Grey, when they are Dyed in a Woad Fat or Copper, as when they are Dyed in the Indigo Copper, according to §. 10. it will be necessary to leave the Silk-Dyers to their liberty, whether they will Dye their Pale Blew's, in the Great Cloth Dyers Copper, (paying them for it) or
in

in their own Indigo Coppers, as they shall judge it proper, with respect to the Mixtures of their Colours.

CCXL.

It being necessary that the Dying of Hatts, should be as good as that of Stuffs, it very well deserves a regulation, especially the Black for Hatts of value, which the Hatters at present Dye so slightly, that the Colour will not last one third part of the Wearing, without turning of a Tawny or Black Grey, to the great disadvantage of the consumer, who is obliged to buy two or three Hatts, where one would be sufficient if well Dyed; and this is the cause that twice as much Money is expended, in the buying of Lambs Wool, Ostrich Down or Hair, Camels Hair, *Peruvian* Sheeps Wool and other Foreign Commodities, of which all fine Hatts are made; which draws several considerable summes of Money out of the Kingdom; when the good Dying of Hatts, would at least keep one half of the Money in the Kingdom, and of consequence lower the price of those Commodities in the places which produce them.

The Dying of Hatts ought to be regulated.

The Ill-Dying of Hatts causes the sending of great quantities of money out of France.

CCXLI.

Before we attempt to fix the well Dying of Hatts, 'twill be necessary to view and examine with the Hatters, upon the spot, the Commodities, and inconveniencies of the

General methods to remedy it.

Countries, The Hairs, the Wools, and Lambs Wools, which are there produced, the Herbs, Roots, Drugs, and Ingredients which grow there, and which may be very useful, as well to the making as Dying, and better wearing of Hatts ; the laws and orders of every Town; in order to reduce the Manufactures of Hatts to the utmost perfection, and cause a value to be sett upon *French* Hatts, and a demand for them in Forreign Countries, where the bad Dying or ill making hath at present ruined the trade in them : and upon this examination and a report of it, a General Rule may be made for the future, which should be as a Law to all the Hat-makers in the Kingdom, and tend very much to their Advantage and the publick good.

CCXLII.

But because it is necessary in the mean while, to put a stop to the present Course of Ill-dying of Hatts, and to discover and correct the abuses, and at the same time instruct the Hat-makers that are ignorant of the Drugs necessary to, and the manner of Dying a Good Black, which is the Colour most in use, and most important in Hats ; and it being farther necessary to assist them by these helps to make a compleat discovery of what may yet be deficient in that Manufacture, that it may be established throughout the Realm; we ought to be informed;

CCXLIII.

CCXLIII.

That to Dye a Hat (made either of Wool or Hair) of a good Black Colour, 'tis necessary to Gall it very strongly, with *Aleppo* or *Alexandrian* Galls, and a very little *Indian* Wood, and let it be very long Gall-
 ing, that the Dye may the better penetrate the felt, and after that in the same Bath to give it a very good Black, with a sufficient quantity of *Indian* Wood, Coperas and a little Verdigrease, letting them continue long enough in the Dye, that it may penetrate the Deeper. But the last mentioned *Indian* Wood ought to be boiled apart before, and set cooling at least 3 or four dayes before the using. The quantity of Galls and *Indian* Wood ought to be augmented in proportion as the Hatts or Hair, more easily or hardly imbibes the Tincture.

Of the good
Black Dye.

First Black.

CCXLIV.

And a small time after, a New Bath of clean Water ought to be prepared, in which ought to be put in cold, a sufficient quantity of *Indian* Wood, and a little Yellow Wood; boiling them together for three hours, and when it is cold enough, a sufficient quantity of beaten Galls should be added, which must be boiled three hours longer with the *Indian* and Yellow Woods; after which put in the Coperas,
 and

Second
Black.

and then the Hatts and the Bath being a little cooled, a little Verdigrease should be dissolved in it, to make the *Indian Wood* take the better, and the Hatts ought to be left a long time in this second Black, that the Dye may sufficiently enter them.

CCXLV.

Third
Black.

But if the Hatts are of a price, and the Hair difficult to take the Black Dye, we ought to give them a third Black, which must be prepared the same way as the second, in the precedent Article; with this difference, that in the the Third the quantity of Ingredients may be augmented or diminished, as occasion or the goodness of the designed Dye requires; and if the lustre of the Hat glances toward the Blew, a little more Yellow Wood should be added; as if it inclines to the Red, the Yellow Wood should be retrenched, and the *Indian Wood* as well as the other Drugs, should be augmented, according as the one hath prevailed over the other in the two former Blacks.

CCXLVI.

The Hatts being well rinsed and cleans'd from the black, you may yet abate their Blewish Lustre, if occasion requires, and soften them with a slight Bath of Yellow Wood, which being naturally a little Gummy, will have a very good effect upon the Hat,
if

if it be either of fine Wool or Hair.

CCXLVII.

As low prized Hatts made of Course Wool may be sufficiently Dyed in the first Black, provided they are well Galled and Blacked and a sufficient quantity of Sumach or *Rodoul* and *Fovic* be used, and the quantity of Coperas be augmented without diminishing the rest: the midling sorts of Hatts cannot be sufficiently Dyed without two blacks, any more than the finest, and the most difficult to receive the Dye, can be finished without three, as specified above in the § 245.

Course
Hatts ought
to have but
one black,
midling two,
and fine
three.

CCXLVIII

As the finest Hatts and the midling sort, maybe rebated and softened with Yellow Wood, so those made of Course Wool having no need of a rebate of the Blewish or Reddish Tincture, by reason of the Sumach or *Rodoul* and *Fovic*, as well as the larger quantity of Coperas used to Dye them, yet may be softened with a slight Bath of *Spanish* Broom, if the Hatter would not rather pass them through a Yellow Wood Bath, after the fine or midling Hatts have extracted its substantial Virtue, which is not absolutely necessary for the rebate of low prized Hatts.

Softning and
rebating.

CCXLIX.

CCXLIX.

Woad for
Hatts.

But tho' Black cannot be Dyed to the last perfection either in Wool or Hair without Woad, the Hatters have quite left off their accustomed use of it in the Dying of Hatts, and believe at the same time, that too strong a Black makes the Hairs or Nap fall off, which is very necessary for the sale and beauty of the Hatts, though this rather proceeds from the hand of the Workman that dresses them than in Dying them, or the Hairs not being sufficiently fulled, or strongly enough united to the felt; for a good Black well applyed never produces this ill effect, but on the contrary contributes very much to the sale and as much to the well wearing as the Hair of the Hat.

CCL.

Now to remove this obstacle, and to Dye Hatts in perfection, 'twould be necessary to oblige all Hatters to cause all their Wools or Hairs to be Woaded according to their goodness, before they are used in the making of Hatts, because the Blew very much covers and disposes the Wool and Hairs the better to receive the Black, tho' they are not obliged to allow so strong a Dye to course and midling Hatts, preserving the last for the finest sort only where the Hair doth not receive the Colour so easily : all which observed, the price of
Dying

Dying a Course Hat will not be above 3 pence, and the finest not above 5 pence.

CCLI.

It will be proper in order to the putting a stop to the course of ill Dying of Hats, and at the same time to have them perfectly well Dyed and made, strictly to forbid all Master Hat Makers to cut off the brims of their Hats, or expose them to sale before they are mark'd with their Mark on the inside, and viewed and examined by the Wardens or Jury of Hatters, who finding them regularly good, should be obliged to express their approbation by a Mark on one side of that of the maker; but if they find them ill-Dyed they should be obliged to seize them, and cause them to be confiscated by the Judges of Manufactures, and a fine to be laid upon the Hatters who have caused them to be ill Dyed.

CCLII.

And if a Hat be found to be ill Dyed, tho' it hath the Marks of both the Hatter and the Warden, it would be necessary that the seller should be obliged to make good the Damage to the buyer, and have his remedy as well against the Hatter that made it, as against the Warden that marked it, and cause them to be fined besides, to oblige them to take particular care that they don't mark Hats which are ill Dyed.

CCLIII.

CCLIII.

Master hat-
felt to be
kept in the
Hatters
Hall.

But that the Examination of the Dying of Hatts, may be made with some sort of certainty, every Corporation or Company of Hatters should be obliged in each Town, or City, to Dye two, four, or six Hat-felts more or less, according as the Company shall judge necessary, of every sort of Wool, or Hair, of which Hatts are made in that Town, of the three several sorts of Black abovementioned, to be kept in their Halls, to serve for Master-pieces or Patterns to have recourse to, the better to enable them to judge, of the good or ill Dying of Hatts.

CCLIV.

Proof boil-
ing for the
Black Dye
in Hatts.

And if 'tis impossible to judge of the goodness of the Dye of those Hatts to be examined at sight, by comparing them with the Master Patterns, the Wardens or Jury who have the right of Marking, ought to take a little piece of the Master felt, which is made of the same Wool and Dyed the same Colour with those they would examine, and another which they may cut off the brim of the Hat in question, so that it doth not prejudice the Hat, or spoil its roundness, and boil them together, with just as much Allom and Tartar, as the weight of the Patterns for half an Hour, after which process they may determine by comparison, concerning the faults which may be committed in the Dye.

CCLV.

CCLV.

And tho' this Examination is not capable of the utmost certainty, yet it being the most exact of any yet known, it will be sufficient to put a stop to this Evil, and to distinguish by the mark, the good and well Dyed Hats, from those which shall be bad or ill made : But 'tis also necessary, that the name of the Town, and a particular Cypher for every Year, should be contained in the Wardens mark, which should also be printed in the Companies Book, that an Action may lye against those who shall commit any abuse of the mark ; and in the Hatters Mark also his name should be set in short, that every thing relating hereto, may be well known and clearly distinguished.

Annotations on Part XI.

THIS Part containing nothing of the Art of Dying, but what relates to its application to Hats, and in §. 240, the Causes of the writing of it; namely, the scandalous abuses crept into it by the Fraud of Hat-makers and Sellers : 'Tis worth considering whether the same complaint may not justly be made in our own Country ; and whether consequently our Authors Advice be not as necessary as plain and extensive, and indeed needs no explication.

P A R T.

P A R T. XII.

The Advantage which will accrue to the publick by the Use, Culture and Sale of the good Drugs, which may be produced in France.

ECLVI.

Good Drugs
produced in
France ne-
cessary to
produce
good Co-
lours.

IT being impossible to produce good Colours without good Drugs, and *France* being capable of furnishing the best, if its fertility was seconded by our Labour and Industry: 'Tis necessary after having taught the manner of preparing good Dyes, to lay down proper means which may contribute to the Trade of those good Drugs which *France* is capable of producing, that our People may apply themselves to the Culture of them, and reap those Advantages thereby, which strangers and our own blind stupidity have deprived us of from the beginning of this Century.

CCLVII.

Drugs serving to the
Dying of
Wools,
which grow
in *France*.

The Drugs which grow in *France* are the best and lightest sort of Woad for Blew, Chermes Berries and Madder for Red; *Spanish* Broom, *Sarrette* and *Genistrolle* for Yellow; The Root and Bark of the Walnut-tree, and the Nutshel, for Brown, which may be otherwise called altogether Walnut-tree

tree Colour *Rodoul*, *Fovic*, — and *Co-*
peras for the Black Allom, and *Tarrar* for
the boiling or Suds. We have also *Verdi-*
grease, common Salt, Lime, boiled Ashes
and Pot-ashes, Tartar Ashes, and the most
of those Ingredients, which in themselves
afford no Colour; beside which, we have
also the *Cassenelle* or Galls which grow up-
on some Oaks; Alder-bark, *Fustel*, *Mal-*
herbe, *Trentanelle* and *Garouille Orseille*;
which are Ingredients, the Use whereof may
be permitted in some Towns, Stuffs and
Colours; as before specified in this Instru-
ction.

CCLVIII.

Though no Country in *Europe* is so well
disposed to the production of Drugs ne-
cessary for Dying as *France*, yet neverthe-
less the Culture and Preparation of them
hath been so neglected, that at present there
are very few in this Kingdom skilful enough
to know their Defects, or the way of re-
establishing the good Culture of them, in
order to give them the same Strength, Sub-
stance and Goodness which they were used
to abound with, when the Culture of them
was equal to their Consumption; all which
requires, that some room in this Instru-
ction should be taken up by the insertion of
some Methods of knowing them, and pre-
venting their Sophistication; but that we
may proceed with some sort of Method,
'twill be very proper to begin with *Woad*,

it being the most profitable, most necessary, and best Drug used in Dying.

CCLIX.

Of Woad.

Yields four
Crops in a
Year.

Woad is produced from a Seed sown annually about the beginning of *March*, hath several Leaves like those of *Plantain*; it grows in *Languedoc*, in the Diocess of *Tolose*, *S. Paoul*, *Mirepaix*, *Lavant* and *Alby*; all under the Jurisdiction of the Parliament of *Tolose*. It yields four Crops every Year which are good, and tho' the first is often better than the second, the second better than the third, and the third than the fourth, the contrary sometimes happens when the spring is too wet and rainy at the time of gathering, and the other Seasons fall out more Temperate, Warmer and Drier; too great humidity rendring the Leaves of Woad larger and thicker, and diminishing its Strength and Substance. This Plant may also be cultivated in several other Provinces of *France*, as may be seen by the slighter sort of it, which grows in *Normandy*, which is really a Species of the same.

CCLX.

The fifth or
Marouchins
sometimes
good.

Besides these four good Crops, some Husbandmen get a fifth and sometimes a sixth, commonly called *Marouchins* — And tho' the fifth be sometimes found reasonably good, when the Autumn is hot and dry;

dry ; the sixth is never good for any thing, or at best but very little, the Sun being then too low to ripen the Leaves and give it the necessary Strength and Substance. The sixth not good.

CCLXI.

There is scarce one peasant in these four Dioceſſes that doth not know when Woad is ripe, and when 'tis neceſſary to gather it. But ſome may perhaps be ignorant why the Leaf is ſometimes ſuffer'd to Wither before it is brought to the Wheel to be ground ; which is only to ripen it more, and evaporate a part of its Oleaginous Juice, which would ſpoil the goodneſs of the Woad : It is alſo left in the Mill-trough eight or ten Days, after it hath been ground very well, ſtopping the Vents and Creviſes daily made for its Humidity to drop away. Woad ought to be well dried.

CCLXII.

After which, it is made into little Loaves, which are called *Cocs* or *Cocaignes*, which they lay to dry in the ſhade upon Hurdles appointed to that end, near every Mill ; from whence they are at laſt taken to lay up in a Store or Ware-houſe, till the owner is pleaſed to Pulverize them, which is commonly done in *January, February* or *March*. Woad is Loaves.

CCLXIII.

Preparation
of Woad in
Powder.

Fit to make
into Balls.

Old Woad
more sub-
stantial
than New.

The Woad being broken or thrashed with wooden Clubs, must be moistened with standing Water, which, provided it is not Foul or Muddy, is always best; and after 'tis well wetted and mingled, in order that it may equally imbibe the Water; then it ought to be stirred at least thirty six or forty times in the space of four Months to prevent its growing hot, and that the Water may equally penetrate it, after which, 'tis fit to be made into Balls, and used in Dying; tho' 'twere better to allow it a little more Age before it be used. For good Woad always augments in Strength and Substance, and if kept six or seven, nay ten Years, it grows better.

CCLXIV.

The proper
means
which con-
tribute to
the ren-
dering the
Woad strong
and substan-
tial.

In order to produce good Woad, the Season of the Year and Weather ought to be good and proper: The Earth must be well Cultivated, and howed or cleansed from Weeds; as must the Woad it self also. Light Earth will never produce it, but the fattest and midling Lands yields the strongest and best Woad, which yields the most Colour, but the mixture of the one with the other agrees very well, and betters the Crop.

CCLXV.

CCLXV.

"Tis impossible to have good Woad, if we do not sow good Seed; but that we may always have the best, we ought to be informed, that there are two sorts of Woad whose Seeds are very much alike, tho' their Leaves are different: The good Woad hath close plain Leaves without any downy Hair, and the other, which is a bastard Woad, affords a downy or hairy Leaf, so that to have good Seed, care ought to be taken in Weeding the Woad, that all the bastard Woad be plucked up and thrown away, not being suffered to be near that which is to be kept for Seed; which by this means you may have pure and unmixed.

CCLXVI.

But if Rainy Weather causes, the good Woad to degenerate to the Bastard or Wild sort, as it turns Wheat to Tares; in howing the Weeds particular care must be taken that the good that is left be cleared from this sort; by eradicating the bad, which otherwise will eat up the Substance of the good, and by weakning it, quite spoil it; and the Earth being loaded with these hairy Leaves very much hinders the goodness of the Woad.

CCLXVII.

Dew, Weeds
or other
Herbs very
prejudicial
to Woad.

Particular care ought to be taken not to gather Woad with Dew upon it; nor to mix any other Herbs amongst its Leaves: for nothing is really more contrary to its Nature, or can do it more hurt; because other Leaves yielding no Colour, attract that of the Woad, and consequently weaken it very much, as well as lessen its Substance.

CCLXVIII.

First Crops
best.

Tho' the three first Crops are commonly the best, and that Woad prepared by a mixture of these three, is always best; 'tis nevertheless necessary, that those who gather four Crops only should mix them altogether, because 'tis impossible to prepare the last well alone, there not being enough to make a heap sufficient to give it a proper heat.

CCLXIX.

When five
Crops are
gather'd the
two last
ought to be
mixed toge-
ther.

But those who gather five Crops in a Year, when they have been favour'd with fine Weather, ought to make a separate heap of their fourth and fifth Crops mixt together, which ought to be sold for the slighter sort of Woad, without suffering it to be mixed with the Balls of that of the three other Crops; that the Dyer may use them alone or together according as it suits his
con-

convenience, without being cheated in the buying of it. But the sixth Crop ought to be absolutely forbidden, because it often serves only to eat up the Substance of the other.

CCLXX.

The want of Consumption hath been the cause why the Culture of Woad has been left off: And the Inhabitants of the four Diocesses employing their Lands in sowing great Millet or Hirse and Tobacco, these two plants, which spread their Staulks like little Trees, and yield a prodigious quantity of large Grains or very large Leaves, have so exhausted the moisture and Substance of the Land, that indeed at present there is not vigour left sufficient to produce a Woad strong enough to yield its accustomed quantity of Colour, as formerly, when the Lands were not impoverished by the mentioned two plants (and that they are is visible from the poor Crops of Corn,) on the contrary, the proper Culture of the Earth for Woad, renders the Lands abundantly more fertile and rich, for which reason, the upper *Languedoc* is esteemed the best Land in the World.

Want of Consumption, the Cause why Woad is not sowed. Great Millet and Tobacco impoverish the Ground, and hinder its yielding the former strength to Woad.

CCLXXI.

Tho' the great fertility of the land of upper *Languedoc*, and the profit which accrues to the Inhabitants by the Culture and

Woad gives a name to fertile Lands.

Culture of
Tobacco &
Millet ruins
Land.

Demand of Woad, hath justly fixed the Name of *Cocaigne* Lands (which is the name given to Woad before it is reduced to Powder) and made that Country the happiest and richest in *Europe*: 'Tis to be feared that having lost its Advantages and Riches for want of a demand for its Woad, it will for a long time at least loose its fertility, if the evil be not speedily remedied by preventing the Culture of so large quantities of Millet and Tobacco, which will utterly exhaust the Substance of their Lands; these two Plants being very improper to be cultivated in large quantities any where, besides the *Indies*, where they have land enough in reserve, to let it rest after they have gather'd their Millet and Tobacco.

CCLXXII.

General
causes of
weakening &
spoiling the
Woad.

The weakness and slight Substance of Woad at present is owing to its want of proper Culture, negligence in its preparation, the little Care that is taken to separate the Leaves from those of the wild Woad and other Weeds, and the inconsiderate mixture of the first Crop with the latter, to the sowing Woad where we have gathered Millet or Tobacco, to the small quantity of Woad that is produced, (for every one prepares it according to his own humour, and his heap being too little to preserve its heat, it cools and dries, which occasions the loss of the greatest part of its Substance,

stance) and to this that for want of great heaps, the making of prooves by which its goodness is known, is neglected.

CCLXXIII.

Besides these Evils which proceed from the faults in the Culture, or curing, there is another, which is the Source and Encourager of the former, and which is owing to the Ignorance or ill Designs of some Dyers; who to engross to themselves in prejudice of their Brethren, all the Profits and Advantages, (which should come in common to the Dyers of the place) occasioned by Proofs of Woad, which they sell, or which is there sold; they suffer it to pass slighter than it ought, by agreement betwixt the buyer and seller, one deceiving the other, and both defrauding the Publick, by giving a false report, and so making the Woad pass for better than it really is.

Fraudulent
Reports up-
on prools,
the cause
why Woad
is not good.

CCLXXIV.

As the Buyers are cheated by these fraudulent Attestations, which cause them to buy Woad dearer than its worth; and those who sell it believing that the Deceit they have used, hath made it better than they expected: This reciprocal Cheat, when the Buyers discover it, makes them afraid to buy any more of a Commodity in which they cannot deal without loss, and which they can be no otherwise inform'd of its good-

The Seller,
Buyer, and
Publick, de-
ceived by
Fraudulent
Attestations

goodness, than by the proof, which they will no longer rely upon; after they have found the Attestations false, and on the other side, the Sellers continue to falsifie or mix their Woad, hoping by Corruption to find Dyers, who shall still give it a false Attestation, when being frustrated in their expectation, their Woad is decryed and sticks upon their Hands, they not being able to sell it.

CCLXXV.

True Attestations would Correct those abuses.

If the Proofs and Attestations were made according to the Method prescribed by the old Orders, this abuse would never have grown to the pitch it now is; and Indigo would never have been so much used as 'tis at present in Dying, for every Man being inform'd by the Proof and true Attestation of the goodness of Woad, they would always endeavour to better it, since the price being proportioned to its goodness, would always encourage them so to do; and by this means finding its Faults, they would be enabled to Correct them for the future.

CCLXXVI.

Tho' the Woad be weak, 'tis alwas one of the best Dyes.

Tho' good Seed, good Husbandry, proper Culture and preparation, as well as fine Weather, augment or diminish the Strength and Substance of Woad; They never alter the Colour, which is always good

good and the best and most necessary Ingredient for Dying, since 'tis used in the Composition of most Dyes, which can neither be rendred good or lasting without it; and indeed deserves our more particular Reflection.

CCLXXVII.

'Tis not sufficient only that we instruct those who are ignorant in Husbandry, the Culture, and preparation necessary to produce good Woad, and to give it the most Strength and Vigour possible, as well as re-establish its Commerce; But we ought to strike at the Root of the Evil, and put a stop to the fatal course of Cheating and Fraudulence. Now to succeed well in both, these several things are necessary.

To re-establish 'tis necessary to prevent Fraud.

CCLXXVIII.

First, That the Officer which shall be sent by the Surintendant of the Manual Arts, Commerce and Manufactures of *France*, should in the most convenient Town of that Country, call together an Assembly of the most intilligent Persons, which the Corporations of each Diocess of the four together shall depute, who in conjunction with him should in this Assembly prepare Statutes and general Orders for the Husbanding, Culture, Preparing, Prooves, Weights, Sale and just using of Woad; for the separation of the last Crops, the present value of Livres, which

A Commissary & Assembly necessary to prepare Statutes concerning Woad.

which are in this case as Carrats to Gold and Silver, to adjust the goodness of Woad upon what Foot it should be established, the several Marks, Bails, according to the Crops or Degrees of goodness; for the Establishment of Inspectors in every Corporation or Parish, to regulate the Mills and all things in general, which they shall find necessary to be reformed: Which Statutes being prepared and signed by the Officer and the Deputies, or Magistrates of the Place, should be sent to the Superintendant of Manufactures, in order to be viewed, confirmed, corrected or approved; after which, they should serve as a standing Rule or Law.

CCLXXIX.

Inspectors
and their
Functions.

Secondly, That two Inspectors or supervisors more or less (according as the place is great or small) should be chosen out of the most understanding Men thereabouts, who ought to be renewed every three Year in the beginning of *January*, and should be obliged every fifteen Days, or oftner, if necessary, to visit all the precinct depending upon that Corporation or Parish, in order to put the Statutes in execution: And if they find any thing contrary to those Laws, they should draw up a report, and the Magistrates of the place, with the assistance of the Commissary to judge of it, if he happen to be near (they being obliged to call him to their assistance) before they proceed to
con-

condemnation, to the end that all things may be regularly managed, and not hurried on by Revenge or Spleen.

CCLXXX.

The said Supravisors should keep a Register of all the Woad deliver'd, Crop by Crop, what is sold, thrashed or beaten in their districts, as well as the Woad in Powder, which is prepar'd and sold. Of all which they should give a general Account every Year at the beginning of *December*, to the Officer appointed to receive it by the Surintendant.

CCLXXXI.

In the third place, 'twill be necessary that the Owners or Farmers of Mills should keep an Account of what Woad is brought to their respective Mills to be ground, Crop by Crop, of which they should be obliged to deliver a particular to the Supravisors every Month, who shall be obliged to insert it in their Register, in order to be delivered to the Commissary, as above.

Account of
Woad un-
ground.

CCLXXXII.

Fourthly, That the Jury of Dyers shall be obliged to keep an Account of all the Proofs of Woad, which themselves as well as other Master Dyers have made, with the Day

Register of
Proofs.

The Art of Dying.

Day of the Month when they were done, the Name of the Dyer who performed the Operation, and who it was made for, the owner of the Woad, and the adjudged degree of goodness; and that the Dyer who made the Essay as well as the Jury of Dyers should be obliged to sign their names under the Article of every Essay in order that extracts may be delivered to the Buyers and Sellers, and any others to whom it shall be necessary.

CCLXXXIII.

Register of
Weighers
and Pack-
ers.

The same ought to be practised, with respect to the Weighers and Packers, or makers up of the Bales of Woad, who should also be obliged to keep a particular of all the Woad, which they Weigh or Pack, the date, its goodness, the Buyer and Sellers name, the mark of the Bales, and the Places, Shops or Ware-houses, where they weighed or made up the said Bales. Which Accounts they as well as the sworn Dyers shall be obliged to deliver the State off Annually in the beginning of *December* to the Deputy of the Surintendant.

CCLXXXIV.

Private In-
terest causes
a neglect of
the Pub-
lick,

In the fifth place, Experience having convinced us, that thro' the carelessness or the Ignorance of most People in those things which belong to the publick good: That Envy, Interest or Complaisance frequently

ly cause them to be slighted and neglected at first, as not worth the thought, which is confirmed in Woad, the want of a Demand of which alone hath been the Occasion that upper *Languedoc* hath lost above forty Millions of Livres since the beginning of this Age; which hath only happened by the neglect or Ignorance of proper means to prevent it, since our Kings, their Council, the Parliaments, and States of the Province of *Languedoc* have never been wanting in publishing Edicts and Ordinances to favour the Consumption of Woad, and prevent the use of Forreign Indigo in *France*; but all these have been ineffectual for want of the means mentioned in this Instruction.

CCLXXXV.

7 It plainly appears that the Indigo which the *Spaniards*, *Genovese*, *English* and *Hollanders* have vended in *France*, hath hindred the sale and consumption of our own Woad; but we will not be perswaded that negligence in the Culture, and preparing it, hath contributed as much as the former, to ruin the Trade of it: And tho' the last Evil is but an effect of the first, yet 'tis impossible to remedy them both, without using such means as are proper for the one as well as the other, contained in this Instruction: Nor can we otherwise adjust the Interests of upper *Languedoc* and the *East-India* Company, than by permitting the use of

Neglect of the Culture of Woad hath contributed as much to the ill as Foreign Indigo.

By Foreign
Indigo, our
Author
means that
not impor-
ed by the
*French East-
India Com-
pany.*

of six Pounds of Indigo to every Bail of Woad, and strongly reiterating the prohibitions of the use of *Foreign Indigo*, which will reduce the Indigo imposed by the *French East-India Company* and Woad to about an equal consumption, and will be sufficient for all sorts of Dyers, which will be made good by their mixture; which would be impossible if the use of Foreign Indigo be allowed, because our Woad being used in less quantity, will not be able to correct the *French Indigo* and the abundance of Foreign Indigo, which is continually used in vast quantities and bastardize two thirds of our Colours, ruins our Trade, and the use of *French Indigo* as well as Woad.

CCLXXXVI.

A Commis-
sary necessa-
ry, & why.

Wherefore it seems necessary that the Surintendant of Manufactures should depute an Officer or Commissary on these occasions, that hath capacity and judgment enough to execute his Orders faithfully, and by virtue of them to call together the Assemblies of Diocesses, in order to draw up Statutes and Orders, and to cause them to be ratified afterwards by the Royal Council of Trade, that they may be put in Execution throughout the four Diocesses, and other places, where it shall be found necessary: And he should personally visit the places, to see whether the Supravisors, Dyers, Millers, Weighers, Packers and other Persons discharge their Offices duly, and

and to keep a general Register of all the Woad, which is gathered, sold and used in the four Diocesses annually; and lastly, to have a general inspection over all that shall be judged necessary for improveing the Culture, Preparation, Use and Consumption of Woad.

CCLXXXVII.

Vouede or slight Woad, being a fort *Vouede* or the slight Woad. which grows in *Normandy*, but much weaker and less Substantial than the better sort of Woad, by reason of the poverty of the Soil and want of heat, where it is produced, which hinders the fermenting and ripening, necessary to give it the Strength and Substance to be found in the above-mentioned first Crops, for which reason, 'tis as weak and poor as the last Crops of *Languedoc*. The Culture of this is exactly the same with the former, because they are both of the same Species, wherefore 'twill be unnecessary to dwell upon it; we'll only observe that the land being cold, the Woad very feeble, and the Crop very small, it ought to be but little moistened, and as much as possible used in conjunction with the better sort, that it may partake of the Substance of the latter, because otherwise it will be impossible to heat it, or use above a Pound of Indigo to a hundred weight of Woad, without Bastardizing the Dyes, or loosing time and Woad in endeavouring to heat it.

Y

CCLXXXVIII.

CCLXXXVIII.

France Fertile, and full of People is not well cultivated nor its People employ'd.



'Tis impossible to see the fertility of *France*, and to see at the same time such a great number of idle unprofitable Wretches stand with folded Arms, whilst they might be usefully employed in the tilling of the Land, and other profitable uses, which kind nature Offers to them; to see them, I say, live at the expence of others sweat and blood, without blaming the civil conduct and negligence of the old *French*, and their Application to useless employments, and being used to puff up themselves with Wind and Smoak, which produced Whirlwinds and Tempests, which have hazzarded the overturning of the State by civil Wars.

CCLXXXIX.

Madder may be cultivated in several places of *France*.

What I have been saying is clearly confirmed by the Root of Madder, which the Earth spontaneously produces in most of the Provinces of *France*, maugre the slight and negligence of the *French*. Is it possible to see this our tender Mother so liberally display and disperse her generous productions and Riches (to rouse us out of the Lazy Sleep of Idleness, and excite her Children to Work) without censuring the blindness and Stupidity of our Nation, that suffers it self to be drained of its Money, to purchase these Commodities

ties of Strangers, which they might gather at home in abundance.

CCXC.

From all which 'tis at present thought highly reasonable by our civil Government, to establish the Culture of Madder, the purchase of which Commodity, yearly exports above five hundred thousand Livres; 'tis then inserted in this Instruction, that the *French* may grow wiser, and learn to cultivate it in *France* and the *French Flanders*, and by this means furnish *Spain*, *Italy*, and other Neighbouring Countries which want it.

More than 500000 Livres exported annually to buy Madder.

CCXCI.

Madder is a Root which grows Spontaneously in most places of the Kingdom, but carefully cultivated in *Flanders* and *Zealand*, and the best is to be found about *Lisle*; and tho' this Root is very profitable, yet 'tis very easily cultivated and managed, and will be contented with an indifferent Soil, and is most plentifully produced in Land moderately moist, such as drained Fens, rather than in too dry Grounds; tho' 'tis also necessary to take care that the Water do not continue or stand upon the Land, because it putrifies the Madder, and renders its Culture wholly insignificant.

Of Madder.

CCXCII.

Its Culture.

Those Lands designed to sow Madder ought to be deep ploughed, and very well dunged before Winter. Those Grounds which are a little Sandy, and have been very deep ploughed remaining more hollow, contribute best to the Madders taking and encreasing its Root, for which reason, they are more proper than more retaining and clay Grounds, which press the Root too close and hinder its growth, as well as too dry Lands, for want of moisture.

CCXCIII.

Of Sowing
and Weed-
ing it.

After the Earth is well prepared, Madder is commonly sown reasonably thick in *March*, in the wane of the Moon, Harrowing or raking the Ground to render it more solid, and the better to eradicate the Weeds of which 'tis very necessary it should be very well cleansed, especially at the beginning that they may not drain the Substance of the Earth, and mix their Roots with those of the Madder, which will spoil its Growth: And tho' Madder being grown pretty large attracts so large a share of Sap, that it prevents the Earth's throwing out a great quantity of Weeds, yet this ought not to save us the Labour of keeping the Ground perfectly free from them: But as the Weeds ought at first to be plucked up by the Roots with the Hand, for fear of eradicating the tender Madder with the other, it may be done with proper hoeing Instruments when the Madder hath
ta-

taken deep Root, and is grown larger.

CCXCIV.

The Madder Root ought to be very large before it is plucked up, or gathered, which ought to be done in less than 18 Months after it is sown; The gathering of the largest is generally begun in *September*, cutting the Leaves of that which you leave in the Earth, for when you gather that which is ripe you ought to leave those Roots which are not ripe in the Ground and covering them with Earth, suffer 'em to grow till the next *September* following, when you may again gather the largest, and so consecutively for the space of Eight or Ten Years; during which time your Madder Ground will continue, well stored either with Roots left to grow larger, or those which remain deep in the Earth, or those formed of the Fibres or from the small remaining parts of Roots which have been plucked up: but after the expiration of that Term of Years, the Madder should be sowed in other fresh Lands, the old Ground being no longer fit to produce it; and Madder as well as Woad, is endowed with the excellent quality, of clearing the Land of Weeds, and consequently rendring it more fertil and proper to sow Corn in, of which it will then yield extraordinary plentiful Crops. Madder is so easily produced, that its very Stalks laid in the Earth will take Root, and serve to replenish a Madder

The first Crop ought to be gathered 18 Months after 'tis sowed.

And afterwards annually for Ten Years.

By its good culture,

It Fructifies the Land.

Y 3 Ground

Ground, that is almost cleared of its Root.

CCXCV.

Madder :
Grounds
planted
with the
plant its
self.

The New Madder field may be cultivated by gathering all the small and immature Roots of the Old one and Transplanting them into the new, as is practised in young Onions and Leeks, the Land being first well tilled : This practice will very much advance the Madder Ground, because the Root being already somewhat Grown, will the more easily take in the fresh Ground.

CCXCVI.

Madder after 'tis
dried is
ground and
put into
Sacks.

The Madder Root of *Flanders* and *Zealand*, after its grown sufficiently Large and Ripe, is gathered and laid a drying in the Sun, or in very warm Land in the shade, after which the better to preserve its Substance and Colour, it must be ground to Powder in a Mill, in order to be well packed in double Sacks, to prevent its flying out, and there it is kept for use. The freshest Madder produces the brightest Dye ; that of a Year old yields more Colour, but that which is too old loosing its Colour looses also its Vivacity, and as it fades it renders the Dye very faint.

CCXCVII.

CCXCVII.

But as this way of cultivating Madder, is rather the result of the curious experiments, which have been made for diversion, and to try whether it was possible to produce it in *France*, than of a nice culture designed for profit; and that those who plant it may every Day discover new and more Advantageous ways, as well of cultivating as preparing it for use: It would be necessary that the Commissary should search for the People most strongly bent to this sort of Husbandry, and the lands most proper for it; in which case, he should above all choose those places where the Seed is cheapest, or the Lands are Untilled, in order to oblige the Inhabitants to Till them, and receive the Profit which Madder improvement would yield them; to which purpose, the Commissary should prevail upon two, or three, or more of the most skilful Husbandmen living near *L'Isle*, to come and teach the Inhabitants their Method of improving Madder, and to work themselves in the cultivating it, in the places chosen by the Officer.

Persons and places proper for its Culture.

CCXCVIII.

There is a sort of Madder which Foreigners sell us, under the Name of *Billon de Garance*, which often is only a sort Red Earth, mixed with Madder Dust, or the

Falsified Madder ought to be forbidden.

refuse of that which hath been once used in their own Country, which is indeed a very pernicious cheat, because this sorry Stuff is generally put off in Barter for other Commodities, and in these sorts of exchanges the Traders believe 'tis allowable to cheat one another, contrary to the reciprocal justice of Commerce, and to the great prejudice of the Dyers, whom they oblige to take this trash in payment for their Dying; and the publick is hereby imposed on by bastard Dyes, which spoil the Stuffs; for this pretended Madder affords no Colour, and only serves to rot the Wool by its earthy Parts sticking close to it. Wherefore 'twould be highly reasonable to prohibit this trash, and to cause it to be seized and confiscated, with the farther punishment of a Fine, and not to suffer any that is not of a just goodness to come into *France*, which pursuant thereunto should be viewed by the Officers to see if the Marks of the Sacks or Bails be right.

CCXCIX.

Of Spanish
Broom.

Spanish Broom is a plant which grows spontaneously, or is cultivated, in almost all the Provinces of *France*; it should be sowed very thin in light Earth, in *March* and *September*, and being well howed and cleansed from Weeds, 'twill be ripe the *June* or *July* following: In cold Countries it ought to be dried after it is gathered, but in hot places 'tis commonly gathered dry enough; but

but particular care ought to be taken, that it be not any ways moistned after 'tis gathered, as well as that it be not gathered before 'tis thorough ripe. The lesser sort inclining to Red, is more Substantial, and better then the large, which is of a kind of faded Green Colour; But that which inclines to Black, or is become musty by being wetted or gathered too Green, is the worst of all, and produces a faint worthless Colour. All the Provinces of *France* being well acquainted with the culture of this plant, I need say no more concerning it.

CCC.

As there are very few Provinces in *France*, where Walnut-trees are not very common, so there are hardly any Husbandmen who don't know that the Root, Leaves and Bark of the Tree, and the shells of the Fruit are used in Dying, and that consequently they can have Money for them of the Dyers; 'tis only necessary to inform them, that the Root is only good in Winter, when all the Sap of the Tree is retired into it; the Bark when the Tree is in full Sap, the leaf when the Nutts are not perfectly formed, and the Nutt shells, when the Nutts are in their Green shells, and when the Kernel is good to Eat. To preserve the Dye contained in them a long while, they ought to be put into a Copper or Tub filled with Water, from whence they ought not to be taken till they are to be used in Dying.

Of the Root,
Bark, leaves
of the Wal-
nut-tree and
the Walnut
shells.

CCCI.

Of Chermes
Berries.

Vermillion, Scarlate grain or Chermes Berries, is the Alchermes of which the Apothecaries make that fine composition which they call Confection of Alchermes. It is a berry that grows Naturally upon a certain Species of Holmtrees (sometimes called the Scarlate Oak) in the Wild and Barren places of *Provence*, *Languedoc* and *Roussillon*, having no occasion for Culture, but growing spontaneously, 'twou'd be unnecessary to say much of it, only to hint that it ought not to be gathered till perfectly ripe, because then it renders its Colour best; and that it may be abundantly gathered, we ought to cause its consumption by using it in our Dyes according to this Instruction.

CCCII.

Of the An-
cient Pur-
ple.

The Antients not having discovered the secret of our Chermes Berries or Vermilion to Dye their Wools or Stuffs, used the Blood of a sort of Oyfter or Fish, to Dye their Scarlate or Purple, the finest sort of which was prepared in *Phœnicia*, that being the Coast which most abounded with Oyfters, and where this Dye was first discovered by the following accident; a Dog having eaten some of these Fish tinged his hairy Skin of a beautiful Purple or Scarlate with their Blood. This Dye became so clear and highly esteemed, that Kings,
and

and Emperors only wore it, and that in little bands, as a mark of their Sovereignty.

CCCIII.

But after the secret was discovered of producing a finer Purple or Scarlate at a much cheaper rate, with our Berries or Vermillion, than with the Blood of the Fish; the latter grew so obsolete, that at present 'tis not known so much as what sort of Oyfter or Fish yielded that beautiful Dye, which would pass in these Days for an indifferent Colour, no ways to be compared to that of our Chermes Berries.

French Scarlate better than the ancient Purple.

CCCIV.

But as the Antient *Phœnician* Purple gave way to our Scarlate, whose Colour is much cheaper and finer, so our *French* Scarlate is almost grown obsolete by the Inconstancy and Levity of our Nation, and is forced to make room for the *Dutch* Scarlate, a New invented Dye, which hath more Lustre, but less solidity. At first it took very much in *France*, after which the People being perswaded that both were given to spot and stain, they turned them both out of Fashion, by which means the sale of abundance of our best Cloaths was spoiled, which had been dyed of this rich Colour, which the chief of the Nobility were accustomed to wear, or at least always to have

Dutch Scarlate apt to spot.

The Art of Dying.

have Cloaks of it, a Fashion more magnificent and finer than that of Chamblet Cloaks at present, which are most of them made in Foreign Countries, and are less Gentile as well as dearer, not to mention that they are not so lasting as the others.

CCCV.

How to establish the French Scarlate.

To establish the Advantagious Manufacture of Cloaths, and to promote the consumption of Vermillion or Chermes Berries, 'twill be necessary to re-establish the wearing of Scarlate Cloath amongst People of Quality, and the Gentlemen of the Army: 'Tis a Colour so August that it seems the most proper to distinguish People of Condition and high Posts, and the Cloath is by the Dye the better preserved from Rainy and ill Weather, than by any other, whilst Foreign Chamblets fray and rent, not being able to endure half the ill Weather as the former.

CCCVI.

Sarrette and *Genistrolle*, being two plants which grow spontaneously: *Rodoul* ——— and *Fovic* ——— being Leaves of small Shrubs which are not cultivated, 'tis therefore unnecessary to speak of either of them; the most ignorant Person in the World, who lives where they grow, knowing very well, that they are useful in Dying.

CCCVII.

CCCVII.

We ought only to observe that as well *Sarrette* and *Genistrolle*, as *Rodoul* and *Fovic*, that is design'd to be kept any time, ought to be very ripe before it is gathered; but that which you would use immediately, it is not of Importance whether it be so or no.

CCCVIII.

Most People know that Tartar proceeds from Wine Lees, that Verdigrease is made of Copper and Grapes which have passed the Wine press; that the Ashes used in Woading are reboiled Ashes; and that burnt Tartar is the Lees of Wine burnt. We ought only to observe that Wine Lees is to be had in all *France*, and that burnt Tartar is a very necessary ingredient in Dying in all the Provinces of *France*, wherefore 'twould be proper to establish in two or three Towns in each Province, Persons who Understand that Process, that the Dyers may not be obliged to go far to buy it, and to encourage these People with a sort of Priviledge for six or twelve Years.

Of Tartar,
Verdigrease
boiled Ash-
es, burnt
Tartar Ash-
es.

CCCIX.

Nature which hath so well disposed *France* for the production of Vegetables proper for Dying, hath not been less Libe-
ral

*France pro-
duces Mine-
rals for Dy-
ing.*

ral to her in Mineral Salts useful in the same Art; she has bestowed upon her Allom and Vitriol, which are found in several parts of the *Pyrenaean* Hills, and various other places in the Kingdom, as well as several other Minerals, which we go in quest of to Forreign Countries. If some *French* Men would be as earnest in search of them, or as just in rewarding discoverers, as they are greedy in attributing the honour of it to themselves, and unjustly usurping the reward, they might easily be found.

CCCX.

Activity of
the *French*
contrary to
discovery or
long winded
Labours.

The Activity of the *French* Temperament, which renders them very improper (as long as the fire lasts) to make any new discoveries, or apply themselves vigorously to a labour which they believe will continue a long time, bends their inclinations very forcibly to pursue the designs which others have began, and reap the Fruit which they have not sown; but sometimes finding their desired Crop not so near as they expected, or desiring to reap it alone, they grasp at more than they can manage, but soon quit their designs, and as much as they are able hinder others from continuing them, which is the true reason why no Body ventures at discovering, nor labours in the Mines in the Kingdom; wherefore we are obliged to buy at a very dear rate of Strangers, what our own Country would abound in if improved.

CCCXI.

CCCXI.

Tho' the Allom proceeding from the *Pyrenæan* Mines on the *French* side is falter, Of French Allom: which renders it less fit for Dying than that of *Rome*, or *Civita Vecchia*, nevertheless as the excellence of the latter may be owing to their way of curing or preparing of it, by which they do as it were purify it from all the disagreeable qualities of the Mine, which may adhere to it; 'tis also probable, that if Workmen were brought from thence to purify our own Allom the same way, it would be better at least than it is, if not as good or better than that which comes to us from several parts of *Europe*, where the Natives know better how to Husband Natures Benefits than we do: If this were tryed, 'twould keep a great deal of our Money at home.

CCCXII.

The Vitriol dug out of the Mines at the bottom of the *Pyrenæes* on the *French* side, Of Vitriol. being fatter and more Claiy, than that which comes from *Flanders*, *Liege* or *England*, may perhaps discourage those who would attempt the working of our Mines, if they are not informed that our Mines not being sufficiently opened or dug any farther than the Surface, where the Mineral naturally contracts faults of its neighbouring Earth, which in conjunction with the Vitriol forms a
Crust

Crust compos'd of one and the other ; when 'tis indeed more than probable that if we dug deeper into the Body of the Mine, we should find the Mineral better digested.

CCCXIII.

Minerals
never ex-
tracted per-
fectly fine
out of the
Mine.

Minerals are never dug out of the Earth perfectly clean and fine ; they must be refined and cleansed from their noxious qualities, and if in some Mines they do not rise so absolutely pure and perfect as in others, the vast quantity which may be extracted, the convenience of an easy Transportation and sale, may recompence the other faults. If our Allom is not so good as the *Roman*, it should not hinder us from using it in several Colours, as well as the White Allom which comes from several parts of *Europe*. The same might be said of our Vitriol, if the Mines were well opened.

CCCXIV.

Ways to
cause the
French
Mines to be
discovered
& wrought.

Wherefore that we may not leave such a rich Treasure unemploy'd in the Bowels of the Earth, and to oblige our Country-Men to discover those Mines that may be yet unknown in *France* ; 'tis necessary to allot a small recompence to those who first discover Mines, and to cause them to be incessantly wrought by skilful Workmen, who should be brought from Mines of the same

same Nature in other Countries, if there be none in *France* who are fit.

CCCXV.

We have also in *France* *Cassenolle* or Galls which grow upon Oak Leaves, Alder Bark, *Fustel*, which is a small sort of Wood that comes from *Provence*, *Malherbe* and *Trentanel*, two Plants which when used emit a very strong Scent, they grow in *Languedoc* and *Provence*. *Garouille* is to be found in *Provence*, *Languedoc* and *Roussillon*. Thus you have all the Ingredients requisite to the Dying of some Colours, in some places, and some sort of Stuffs, according to this Instruction; as well as *Orseille*, which is a sort of small Moss or Crust that grows upon stoney Hills or Rocks, and which prepared with Salt and Urine, produces a very fine mixture of Colours: There is also another sort, which is to be found in *Roussillon*.

CCCXVI.

Tho' *Orseille* is the same with *Lorcheille* or *Lursole*, which comes from the *Canaries*, and yields no lasting Dye, yet its Beauty has brought this Drug into so great request that Monsieur de *Bethancourt* in his Conquest of those Islands reserved the Trade of it wholly to himself, as the clearest and most advantageous part of his Revenue, and it was what would have turned to a
Z very

very good Account in *France*, if our Nation would not have used that of *Genoua* and other Foreign Countries, instead of that which grows and is cultivated at home, which is at least as good, and produces better Dyes.

CCCXVII.

Conclusion
of this In-
struction.

Tho' *France* produces several other Drugs or Ingredients proper for the Dying of Wools, yet having spoken of the Principal, 'tis only necessary, before I conclude this Instruction, to tell the Reader, that Dying contributes full as much to the Beauty and sale of Stuffs, as the Materials and making, and that it is impossible to Establish commerce without good Colours, nor to have good Dyes without the good Drugs which grow in *France*; but we cannot expect to have them in their utmost perfection without Establishing their Culture, the Provinces which shall be necessary, and without procureing the consumption by using them in our Dyes according to this instruction. All these things evince the intire connection of them, and consequently the impossibility of re-establishing one without the other. And as the whole ought to be carryed on by the same Genius, since 'tis otherwise impossible to reap all the advantages which the Publick may hope for; so these are not so inconsiderable so that the consumption of these Drugs in the Realme may amount to

above two Millions of Livres Yearly ; that being one of the necessary consequences of this following Instruction, as well as those advantages we should reap by employing our People, and the better sale of Stuffs, which good Dying would cause ; which indeed would be very great and considerable.

Observations on the Twelfth and last Part.

W^Hat our Author says in this Part of the Fertility of *France*, with respect to Minerals and Vegetables proper for Dying, that grow there, and may be increased and improved by Culture ; is alike true of *Germany* ; for 'tis very well known, in several places of *Saxony* and *Thuringen*, especially at *Erffurth* and *Gotha*, Woad has been a great while cultivated, and that it sufficiently encreased Trade in those parts, and now would ; If, First, the misuse of Indigo were strictly forbidden and punish'd ; Secondly, If the Fraud in preparing and selling Woad were prevented ; And Thirdly, If several sloathful lazy People were employed (as in other Works to the Publick good) so in particular, to the Culture of Woad. The neglect of the two first hath driven the Woad Culture out of *Erffurth* and *Thuringen*, and 'tis at present mostly got into the Principality of *Gotha*, by the Laudable Zeal of the Inhabitants for the Publick good : But thro' the excessive use of Indigo, 'tis even there less cultivated than formerly. As for the slighter sort of Woad, 'tis easily

The Art of Dying.

enough cultivated, and very well requites the Trouble, and more Woad of all sorts may be produced. Chermes Berries not being so well known, 'tis to be doubted whether it growing Spontaneously is to be produced by Culture; but perhaps it may be found in several of the Woody Countries of *Germany*, particularly in the Lands of the Margrave of *Brandenburg*; and by the help of industry and care may be planted: I doubt not in the least, which is the more to be wished, because *Cochineal* commonly used in Dying, is not always to be had, and 'tis always sold as dear as the *East-India* Company please. Besides that the Dye is apt to spot or stain, and is not lasting. *Madder* is plentiful enough amongst us, as well as in the Principality of *Gotha*, and the Territories of *Breslaw*, from whence comes the name of *Breslaw-Madder*; and tho' it looks coarser and browner, yet there is no other real difference, than that the mentioned (§. 18) famous *Flanders-Madder* is better cured or prepared, which may be also done by us if we please; 'tis true the *Holland* Madder seems cleaner and falls lighter and visibly different in the Dye, and on the contray, the *Breslaw* Madder becoming rather a Red Earth, than a Root, looks of a Walnut Colour; but the difference is undoubtedly owing to the different ways of Culture, tho' some are of Opinion the *Holland* sort ought to be chosen, because it is gaudyer. *Spanish Broom* is not known amongst us, but Broom and Dye Weed

Weed grow spontaneously amongst us in great abundance in several Places, and may easily be sowed where it doth not, to a good Advantage. Turmerick and Verdigrease we have not yet; Walnut-trees are plenty every where, which is so much the better, because the Leaves, Bark, Root and Nut-shells are all useful. We want yet *Sumach*, *Rodoul* and *Fovic*; The two last we have never heard of, but by our Authors Account; tho' upon sight of the Shrub, I doubt not but we should know them. That *Sumach* may be plentifully produced, experience sufficiently confirms by those who cultivate it as an Ornament to their Gardens. Some of our Dyers esteem the *Cassénolle* or little Galls which grow upon Oak Leaves, as the best, they being a right sort of Galls, and it plainly appearing that they are soft and well digested, besides that they yield a most beautiful Dye: Alder Bark we have as much as there is occasion for. Tartar is abundantly plentiful in our Wine Countries. Vitriol abounds in our Mines, of which the *Gosslarisch* and *Silesian* is cheapest. What is not said here by way of Notes to this Chapter, expect in our Appendix by way of review of our Notes.

A N
APPENDIX
 TO THE
INSTRUCTION
 FOR
DYING.

CONTAINING,
 The Natural HISTORY and Cul-
 ture of Indigo, Woad, the manner of
 gathering Cherries Berries, and the Pro-
 perties of Pot Ashes and Verdigrease.

C H A P. I.

Of Indigo.

Indigo is a sap proceeding and prepared from a Plant in the *East-India*; the intire process of its preparation, you have described in *Tavernier's Travels*, lib. 2. cap. 12. and is as followeth:

Indigo proceeds from a Plant which is produced from its proper Seed, sown Year-

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ly

ly after the Rainy Season is over. In its Growth, Ripeness, and Figure, 'tis not unlike Hemp. It yields three Crops Annually; the first is cut when 'tis about two or three Foot high, and is much better than the second or third Crop, the second being esteemed ten or twelve *per Cent.* worse than the first, and the third twenty *per Cent.* worse than the second, which difference is clearly visible upon the breaking of the Cakes. That prepared from the first is of a blewish Violet Brown Colour, brighter and more lively than the other two: But the difference of the Prizes of the several sorts being so considerable, tempts the *Indians* to commit several Frauds, as well in the weight as goodness, which I shall elsewhere mention. After the *Indians* have cut this plant they throw it into Lime Pits about eighty or a hundred Paces in Circumference, or repositorys design'd for that end, and mix'd it with Lime, where it becomes as hard as Marble. These Pits should be about half full of Water, and afterwards filled up with the Plant which is cut down, and daily stirred and intermixed with the Water, till the Colour is perfectly exhausted from first the Leaves, and then the Staulks, so that they turn to a glutenous Substance, becoming like a heap of Clay; after which let it stand several Days without stirring it to settle; and when the Colour is perfectly settled to the bottom, and the Water above remains clear, open the outlets of the Pit hitherto close shut, and let the Water run off,

off, then remove the sediment in Baskets, to a plain Ground, where make it into little pyramidical Cakes. The Indigo of *Amadabat* is made in flat round Cakes. The Merchants that they may not pay Custom for any thing that is not valuable, before they transport the Indigo into *Europe*, cause it to be sifted, and sell the Dust to the Inhabitants to Dye with. Those who sift the Indigo are obliged to take particular Care of themselves, by clapping a Linnen Cloath before their Faces, and stopping all Passages of the Air, except two little holes left for them to see out of. Not only the sifters, but the Clark and Officers of the Company, who have the inspection of the Indigo Works, are obliged every half hour to drink Milk, which is a remedy against the Corrosive quality of the Indigo Dust. Notwithstanding all this Care, 'tis impossible for those People who are obliged to sift, or be about the sifters for eight or ten Days, to prevent all things seeming Blue that they look upon, which I can the better assert, having several times my self tryed the Experiment, in being amongst these sifters such is the Penetrating Nature of this Indigo Dust.

When they make the Cakes out of the Mass, they are used to oil their Fingers, and after they are made, they are laid a drying in the Sun: And when the Merchant buyes any Indigo, he always causes some of the Cakes to be burnt, to try whether there be any Sand in it. For the Workmen who
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make the Cakes, or when they have oiled their Fingers, are very apt to put them into the Sand, and thereby mix it with the Indigo, which spoils and increases the weight of the Indigo, but if it be burnt it turns to Ashes, and the Sand remains. A like Description, see in *Historie des Joyaux* in the Philosophical Transact. 1666, Month of March.

CHAP. II.

Of the Culture of Woad in Saxony and Thuringia.

THe learned *George Wolfgang Weideli* having treated this Subject the most accurately of any that I know, in his *experimentum novum de sale Volatili Plantarum*, I cannot present you with a better Account, than a Translation of what he hath said.

There are two sorts of Woad, the one sowed or planted, called *Isatri*; and the other wild or spontaneous: The use of the former in Dying is very ancient, as appears from *Dioscorides*, ἡ μὲν βαπτὶς ἔσται qua lanarum infectores utuntur; from whence it naturally follows, that the Culture and Preparation of that Plant was not unknown to the Antients.

Hence it was accounted the third staple product of *Thuringia*, according to *Cornar. in Commentar. in Dioscor. Lib. 2. Cap. 169.*
Pag.

Pag. 210. from whence, I doubt not, came our common *German* Proverb, That *Thuringia* alike produces Wine, Wheat and Woad, to which may very well be added a fourth, namely, Wool.

The Production of Woad is very easy in a fat Soil, it growing as fast as Tares.

But it grows best of all in those Fields where Flax hath before been cultivated; if planted in other Ground, the Land ought to be first well dunged.

Whether the Land hath been fertilized by Flax or Dung, it must next be Dug in order to be sowed, or rather ploughed with a Plough made on purpose, called the great Woad Plough, drawn by four Horses. But if 'tis ploughed with the common Plough, it ought to be very slowly and deeply done, the Work requiring Time and Labour; wherefore it ought to be done in sight of the Owners, rather than trusted to others.

The Ground ploughed in *Autumn*, must be left to the moistning of the Snow and Rain, till *Candlemas* Day.

'Tis of no Consequence whether the Seed be stale or fresh: But particular Care ought to be taken that it be not spoiled with Smoak, which renders it wholly ineffectual.

After *Candlemass*, in tolerable Weather, 'tis sowed, but Care is to be taken that it be not done too thick, and a little Snow is to be wished for, which will promote the Growth.

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The Art of Dying.

After sowing, it ought to lye a Day or two, and then should be covered with the Earth by Harrowing.

After *Easter*, it must be very well cleansed from Weeds.

The first Crop is ripe after Midsummer, and when the extream Leaves begin to turn Yellow, or the Flowers are full blown, it must be cut down, laid in heaps, and washed.

After which, it ought to be transported to a proper place to spread it abroad and turn it, in order to dry it; which if carefully done, redounds to the Advantage of the Husbandman, by increasing the Number of Balls, as it tends to the profit of the Buyer, because if it be thoroughly dried the Colour is better and more lasting. But uncertain Weather sometimes drying it, and sometimes moistning it by Showers, when it ought to be freed from all extraneous Humidity, endangers its Corruption, as appears by its frequently turning Black the in space of one Night.

Being cleared of its superfluous moisture, it is heaped up and ground in stamping Mills, commonly used in *Thuringia* for this end, or between Stones, the old way of curing it.

After this grinding it ought to be gathered into heaps, which should be covered at the top to shelter them from the Rain, and left exposed to the Air on the sides, that by Night it may be cleared of its remaining herbaceous Humidity. This Method is described

scribed in few Words by *Ryffins* in *Comment.*
in *Dioscor. Lib. 2. Cap. 177. Pag. 193.*

Being reasonably freed from its moisture, 'tis made into large Balls, and the last time laid to dry upon Hurdles in a roofed place, so that 'tis to be observed, that the greatest Care required, is that of perfectly drying it; for if any Humidity be left, 'twill be apt to putrify it, and render the Commodity as worthless to the Husbandman as useless to the consumer, it being unfit to produce any Volatil Salt. The Balls ought to be left here as long as occasion requires; after which they should be removed to a Granary or Ware-house.

These Balls which are usually sold by the sixty, being piled in heaps grow sensibly hot, and exhale a Urinary Volatile Salt, sooner or later, as the warmth of the Season or the great quantity of Balls occasions it: This spreading Salt not only extends its self to the place where the Balls are, but fills all the Neighbouring Houses with its Smell, and occasions a sort of Dewy drops to hang on the Wall, Roofs and other Parts of the Houses, which evaporate into Air, if the Volatile Salt be not extracted. At last by pouring Water upon it, the heat grows more intense; and tho' it doth not reduce the Woad to Ashes as some assert, yet it turns it to a coarse Powder, fit for the Dyers use.

But to Conclude what yet remains to be said of the Culture of Woad: It should be a second time Weeded, not with Hands

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as at first, but Sheep should be put into the Woad Grounds to eat up the Grass and Weeds, and clean the Woad, which they cannot hurt by eating it, because they cannot eat the Salt, nor can they injure it by treading it down, unless they are left too long in the Ground by the negligence of the Shepherd.

Six Weeks after the first Crop, it may be cut again as before, and six Weeks after that it may be cut a third time, if the Autumnal Weather favour the Work; but if the Frosty Weather comes too soon upon it, the third Crop is not to be expected so good, as well because it hath not been sufficiently influenced by the digesting Sun, and the Dye is poorer, as that the time of washing is somewhat unseasonable, the Water is cold, the Woad is unfit for that sort of preparation, not to mention that its strength is near exhausted, and it affords very little Salt.

From whence it appears that those who plough their Lands for Woad later or about Lent time, can reap but two Crops, the first in Wheat and Rye Harvest, which uses to be called young Woad.

Those Lands which have been made to produce Woad for one Year, ought to be sowed with Barley the next Year.

But if there be a want of Woad Seed, a part of the third Crop should be left standing, which will grow to Seed next Year, and will yield about as much Money as a Crop of Oats.

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Some Farmers after the third Crop, or the second of the young Woad, in order to augment their Gains after the harshness of the Season or Obstacles that have in some measure injured their Crop, choose rather to leave the Plant in the Ground till the lent following, and reap a Crop of slight Woad, called the second sort of Woad, than to Plough their Lands for Barley. But 'tis so great a mistake, that as the Woad is so very poor, so it impoverishes the Ground so much, that much more is lost in a succeeding Barley Crop than gained by the last of Woad.

CHAP. III.

Of Chermes Berries.

Chermes or Chermes Berries you have very well described by *Eicstadius* (*de confect. Alchermes. Pag. 16. 17.*) and the Learned *Ammannus* in his *Manuductio ad* *Materiam Medicam. Pag. 87.* tells us that Chermes is the old *Coccus Baphica*, or Dying *Coccus*. The Bramble or Tree is a sort of *Holm* called *Coccifera* or *Cocciglandifera*. When these Berries are over Ripe (whence the Crimson, Purple and Scarlate Dyes are prepared) they breed a sort of Worm, which turning to a Fly takes its flight, if not prevented by killing it. The Dyers don't press these Berries through Cloth or Sieves,

Gerrard
calls it the
Scarlate
Oak.

Sieves, but infuse them in Wine or Vinegar.

But in the Philosoph. Transactions, for December 1666. *Obser.* 7th. you have an Account of a very curious and Advantagious way of gathering and preparing these Berries. *Verney* a *French* Apothecary in a Description of the Chermes Berries, saith, they are an Excrecence found at the extrem parts of the Leaves, and on the superficies of the Wood which grows in *Languedoc*.

These Leaves are gathered about the end of *May*, or beginning of *June*; and the Berries are found full of Red Juice, useful as well in Pharmacy as Dying of Wool and Silk, to which last end these Chermes Berries when ripe are spread upon a Cloath, and stirred or turned two or three times a Day so long as they continue moist, which is done to prevent their growing too hot; carefully observing when a sort of Red Powder appears betwixt the Berries, which must immediately be separated from the Berries, by sifting them in a Searce, then spread afresh the Berries abroad on the Cloath till the Powder appears again on the superficies of the Berries: upon which they must be again strained, and this Operation must be so often repeated, till no more Powder appears.

When the little Berries first begin to move themselves, they ought to be sprinkled with Vinegar, and rubbed betwixt the Hands; after which they are formed into little Balls,
and

and laid in the Sun to dry. When this Powder or little Berries are so neglected, so that no Vinegar or Acid Liquor is sprinkled upon them, you will find a Number of Flyes proceed from the Berries, equal to the Number of the Berries themselves, which will flutter about a Day or two, and at last changing Colour fall down dead, and deprived of all the bitter tast, that was before in the Berries, whence these Worms proceeded. The dry Husks of these Berries, after the Substance consisting in the Red Powder is extracted, are moistened with Wine and exposed to the Sun, and when dry, are put into a Bag, and shaken by two Men, till they shine very brightly; after which, they're put into little Bags, with a quantity of the Powder, proportioned to the quantity the Berries have yielded, as the 7th, 8th or 9th Part; and as the Powder falls off, more or less, so is the produce greater or lesser.

C H A P. IV.

Of Pot-Ashes.

THE Preparation of this Vegetable fixed Salt is very pertinently described in *Lunckelius de Arte Vitriaria*, and is as follows.

Take the Ashes of hard Woods, as Oak, Beech, Alder, Birch, Hawthorn, and a sort of Husks of Grapes, or the Ashes of any Plant or Tree in general (but the hard Woods afford the most Salt) of which make a sharp Lye, and when it is very clear, boil it in a thick Iron Cauldron, or (where a less quantity is to be made) in a thick Earthen unglazed Pot, press it down close, harden and dry it; and after that, dig it out of the Kettle with a Chissel, taking care that no holes be thereby made in the Kettle; and if boil'd in an Earthen Pot, you may break that off the Mass of Ashes or Grey Saline Substance, which must then be burned till it becomes White: And this is the Pot-Ashes, which ought to be laid in dry places in the open Air, and kept from moisture or Water. The Ashes that remain after you have made the above-mentioned Lye, are an extraordinary good manure for Land, it attracting to its self the Nitrous Salt of the Air, which is the *Cardo Vegetationis* according to *Digby*, in his Book *de Vegetatione Plantarum*. and *Becherus* in his *Physica Subterranea*. C H A P.

C H A P. V.

Of Verdigrease.

Verdigrease is mostly imported into Germany from France, where it is made after the following manner (according to Zwelfer in *Refutat. Tachen. Part 4. Cap. 39.*) Take thin Plates or Leaves of Copper and Grapes, first pressed in the Wine-press, and dispose them alternately in Layers one upon another (putting between each Layer a very fine Linnen Cloath, to prevent their mixing) pour upon it one part of Vinegar, and three parts of Boys Urine; to which some add a little Allom and Nitre; this mixture must, in case it grows dry, be often moistened with fresh Urine till the Copper is thoroughly corroded and turned into Verdigrease, which is made into Loaves like those of Bread, and so kept for use.

N. B. Vinegar put into a Copper Vessel, contracts a sort of Green rust, but not comparable to Verdigrease; and the plain reason of the difference, is, that the pressed Grapes contain the most Penetrating and Subtil Spirit of Wine, which being raised by heating the Grapes in the Pressure, is of a Nature so Volatile, that it can hardly be kept from evaporating in Distillation, or converted to a permanent Liquor, and is very unlike the common Distilled Spi-

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Spirit of Wine, as being of a more searching and subtil Nature : but it is in some measure like that Spirit which issues from the Must of Wine, when in a Ferment, which is so strong, that a whole Cellar where some fats of it are, is filled with a sort of Vapour so piercing, that it often suffocates those who unwarily stay in the Cellar above half an Hour, or don't expel this Noxious Vapour with Coals of Fire, as 'tis commonly done in *Austria*.

F I N I S.



